The Jewell House of Art and Nature.

Conteining diuers rare and profitable Inuentions, together with sundry new experimentes in the Art of Husbandry, Distillation, and Moulding.

Faithfully and familiarly set downe, according to the Authors owne experience, by Hugh Plat, of Lincolnes Inne Gentleman.

1653

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The first Booke conteineth, diuers new and conceited experiments, from the which *there may be sundry both pleasing and profitable* vses drawne, by them which haue either *wit, or will to applie them.*

1 SOndry new and artificial waies for the keeping of fruites and flowers, in their fresh hew, after they are gathered from their stalks or branches.

2 A perspectiue ring, that will discouer all the cardes that are neere him that weareth it on his finger.

3 How to carrie gold in a most secret manner.

4 How to keepe or preserue any foule, or other peece of flesh, sound and sweet, the space of three weekes, or one whole moneth togither, notwithstanding the contagiousnesse of the weather.

5 How to defend fresh water a long time from putrifaction.

6 A marchants compasse, wherebe may know vpon what poinc the wind blowes, in his bedchamber, and in the night time, without beholding the skie, or any vane abroad.

7 How to feed and fatten hens, chickens, geese, ducks, &c. in a more cheap manner, then hath as yet beene made knowne, or common to the world.

8 How to write a letter secretly, that cannot easilie bee discerned, or suspected.

9 How to brew good and wholesome beere without any hops at al.

10 How to harden leather, so as the same shall last much longer in the suckers of pumps, then it doth vnprepared.

11 A conceited chafing dish, to keepe a dish of meat long hot vpon the table, without any coles therein.

12 How to roast meat more speedilie and with lesse fire, then wee doo in our common manner.

13 To make a new peece of Walnut tree or Wainscot, to be of one selfe same colour with the old.

14 How to turne fiue spits with one hand, whereby also much fire is saued.

15 A probable coniecture at the composition of hard wax.

16 To helpe venison that is tainted.

17 A pistol of two foot in length, to deliuer a bullet point blanke at eight score.

18 A peece whereby to performe ſome extraordinary ſeruice.
19 To make greene wood to burne cleere, at the further end of the Ouen.
20 How to walke ſafely vpon an high ſcaffolde, without any daunger of falling.
21 A ſound ball of copper to blow the fire with.
22 How to erect or build ouer any brooke, a cheape woodden bridge, of forty or fifty foot in length, without faſtening of any tymber worke within the water.
23 A cheape Lanthorne to carry a light in any ſtormy weather, without any defenſatiue before it.
24 To plum vp an horſe to keepe him from tiring in his trauell, and to make him foame at the bit.
25 A drinke for trauellers to bee made *Extempore*, when they want good beere or ale, at their Innes.
26 How to endure ones hand in molten lead.
27 To hold an hot iron barre in a naked hand.
28 Sweet cakes made without either ſpice or ſuger.
29 One candle to make as great a light as two or three.
30 Timber made to laſt long in water workes.
31 To cloſe the chops of greene timber.
32 To graue any deuiſe vpon an egge-ſhell, and to thorough cut the ſame.
33 An apparance of ſtrange formes in a glaſſe.
34 Inke to be carried in the forme of a powder.
35 To write both blew and red letters at once.
36 Inke kept from freezing and molding.
37 How to draw any patterne by a deske of glaſſe.
38 Helps for the ſpeedy attaining of the ſecretary hand.
39 To helpe Inke when it waxeth thicke.
40 To renew olde letters that are almoſt worne out.
41 To ſpeake by ſignes onely.
42 Limming with colours drawne from flowers.
43 A ready way to learne the A B C.
44 To graue and inlay colours into al the mettals.
45 To make bad paper to beare inke.
46 To make an egge to ſtand alone without any helpe.
47 To harden the white of an egge into a gum.
48 A cheape candle or lampe for poore folks.
49 To refreſh the colours of old oile pictures.
50 An excellent cement for broken glaſſes.
51 To drie gunpowder without danger of fire.
52 To draw fiſh to a certeine place in the night by a candle.
53 A baite to catch fiſh with.
54 To draw fiſh into a tramell.
55 Diuers good baits to catch fiſh with.

56 A ready way to catch pigeons.
57 A worme to catch birds with.
58 To catch crowes, iackdawes, &c.
59 To kill Seapies, Seaguls, &c.
60 To gather Waſpes.
61 To keepe garments and hangings from moath eating.
62 To helpe beere that ſowreth or is dead.
63 To helpe a chimnie that is on fire preſently.
64 To haue Seafiſh all the yeare long.
65 To make beere ſtale quickly.
66 To ſteale bees.
67 To make a tallow candle laſt long.
68 How to tell the iuſt number of Apples, nuts, ſhilling, &c, as they ly in bulke together.
69 To preuent drunkenneſſe.
70 An excellent tent for a Diamond.
71 Oyle or verniſh made to dry ſpeedilie.
72 To fetch out any ſtaine.
73 To helpe wine that reboyleth.
74 How to make Bragget.
75 Clarifieng of hony in an excellent manner.
76 To make an artificiall Malmeſie.
77 To keepe Gaſcoigne wine good, a long time.
78 To keepe Walnuts good and moiſt, a long time.
79 To preſerue the gloſſe of Spaniſh leather.
80 To helpe ſmoking chimnies.
81 Tinder and matches ſweet, and of a new kind.
82 An excellent mixture to ſcoure pewter withal.
83 To defend a horſe from flies in his trauell.
84 To kill Rats in a garner.
85 To take away the offence of noiſome vaults.
86 Sweet and delicate dentifrices, or rubbers for the teeth.
87 To helpe horſe and man that is tender footed.
88 To keepe oyſters good ten or twelue daies.
89 To keepe Lobſters, Crayfiſhes, prawnes, &c. good, and ſweete, ſome reaſonable time.
90 To make ſmooth or gliſtering floores or wals.
91 To make parchment tranſparent.
92 A cheape morter to be vſed in buildings.
93 A conceited drinking glaſſe.
94 To diſſolue gold, and to part the ſame from gilt ſiluer.
95 To know when the moone is at the full by a glaſſe of water.
96 To melt downe iron eaſilie.
97 To put ſeuerall wines in one glaſſe.
98 The Art of memorie.
99 To make a conceited proiection either vpon Sol or Luna.

100 To nip a glaſſe, Hermetice.
101 A Waggon to be drawne with men.
102 A delicate ſtone to ſweat in.
103 The Art of refining of Suger.

The ſecond Booke entreateth of ſundrie newe ſortes of foyle or Marle, for the better manuring of paſture or arable groundes, with diuers conceits of Husbandry not heretofore published.

The third Booke conteineth, diuers chimicall concluſions, concerning the Art of Diſtillation, with many rare practiſes and vſes thereof, according to the Authors owne experience.

The fourth Booke conteineth, the Art of molding, or caſting of any liue bird, or little beaſt, heatbe, or flower, or of any patterne of mettall, wax, &c. into golde, ſiluer, plaiſter, &c.

The laſt part, is an offer of certeine new inuentions, which the Author wil bee ready to diſcloſe vppon reaſonable conſiderations, to ſuch as ſhall be willing to entertaine them, or to procure ſome priuiledge for them.

FINIS.

Diuerse new and conceited Experiments, *from the which there may be* sundrie both pleasing and profitable *vses drawne, by them that haue* either witte, or will to applie them.

Sundry new and artificial weyes for the keeping of fruits and flowers, in their fresh hew, after they are gathered from their stalkes or branches.

Cause new fourmes of Lead to be made, either round or square, that may fit the bignes of your flower, or fruit which you meane to keep, in euerie of which fourmes place one flower, Cherrie, Plomme, or Peare, hanging by the stalke in such maner as it grew, let these fourmes be well fitted with their apt couers, and sodered verie close with fatte Soder which will runne with a small heate, so as no aire enter, bury them deep in a shady place, where the Sunne may worke no penetration. Some commend a sandie, and some a grauellie ground, aboue all other for this purpose, but if they be well sodered, I thinke any ground will serue the turne, or if you think good, you may hang them by lines in some coole and running brooke. Or else you may put euery seuerall fruit or flower in his seuerall earthen pot well

leaded within, and couered with earthen couers, well burnt & leaded likewise, cementing or closing them togither with the Goldsmiths waxe or cement, consisting of stone-pitch, rosen, powder of bricke, and such-like (although some content themselues with molten Brimstone, and others with yellow waxe and rosen, molten and well wrought togither.) These litle pots you must place within greater, and these greater within vessels of wood, stopping vp euerie breathing place that you can imagine (for here I can assure you that the aire will be a player, vnlesse you can keepe it out of the Alley perforce.) If you would afterwardes burie these woodden vessels, then were it requisite to pitch them well, both within and without: but if you meane to place them onely in coole and fresh vaults, or Sellers, then may you verie well spare this defensatiue, so as the caske be strong and tight of it self. Yet some commende the keeping of fruite or flowers in Glasses made of purpose for them, to be the best of all others, so as the Glasses bee made with long neckes, and bee nipped (*hermetice*) with a paire of whote tongs, the maner whereof you shall find hereafter set downe *num.* 100. I dare not commend in anie high tearmes, the dipping of fruite in wax well tempered with some Turpentine, Pitch, Rosen, sweete suet, or Barrowes greace: where also some woulde haue the fruit first wrapped in paper, to keepe it the cleaner, although I know there is somewhat to bee performed this way in some kinds of fruit which begin to rot frō the outward partes inwardly. But if the fruit begin to rot first at the Core (as the Katherin peare, and diuers other sorts of fruit doe) then all the outwarde couers and enclosures whatsoeuer (yea though they were dipped in dissolued Ambre which is counted the pu-

reſt

reſt and moſt defenſatiue garment of all the reſt) will neuer be able to turne Nature out of her bias. Here alſo ſome ſharpe wittes haue imagined that if ſpirit of wine wel rectified, were glutted with thimbibition of anie flower, vntill it coulde worke no more vpon the ſame, that thereby it were poſſible to preſerue anie flower of the ſame kinde, a long time therein. But this is to bee vnderſtoode onely of the drie leaues which bring nothing elſe but the Tincture and ſtrength of the hearbe with them, and not of the moiſt leaues which will leaue a putrifying phlegme behind them, which in time will helpe to corrupt the ſpirit. Nowe me thinkes I ſee a whole troupe of gallant dames attending with their liſtning eares, or rather longing with their great bellies, to learne ſome newfound skil, how they may play at chopcherrie, whē cherrie time is paſt. Wel, to giue theſe Ladies ſome content, I will vnfolde a ſcroule which I had long ſince as carefully wrapped vp as euer any of the Sybels did their fatall propheſies, wherein I will make them as cunning as my ſelfe (ſauing onelie that I will reſerue one ſtrange venue to foile a ſcholler withal if need be.) The ſecret is ſhort, let one element be included within another, ſo as the one may haue no acceſſe nor participate with the other. But this paraduenture is too philoſophical for women. Then receiue it Ladies with plaine tearmes into your open lappes. For want of Glaſſes with broade skirts (whereof notwithſtanding I doe thinke there are inough to bee had if you can bee ſo gracious with maſter Iacob of the Glaſhouſe) cauſe new Pewter veſſels of ſome large content to be made and of the faſhion of bell Saltſellers, with diuerſe eies or hookes hanging in the inſide, at the which you muſt faſten the Cherries, by their ſtalkes, and hang

them so as that one maie not touch an other, the skirts of which vessels you must compasse with leaden rings of such weight as may be able to presse the downe to the bottome of some leaded panne, wherin you must place them, hauing first filled the panne almost full with fayre water prepared as is heere set downe *num. 5.* least by putrifaction of the water, the Cherryes also beginne to putrifie vvith it. Yet heere you muste bee carefull that the Cherryes hang within the ayre of these inner Vesselles, not touching the Water, which may happilie rise one inche or somewhat more within the innermost skirtes of them. And thus the ayre beeing kept coole, and defended from chaunge (vvhose alteration from heate to colde, and from moysture to drinesse, is the principall meanes of the ruinating of all mortall bodies) will preserue such Cherryes as it receyueth in charge for two whole Moneths at the least as I haue long since prooued. And peraduenture if you make choyse of sounde fruite gathered after two or three fayre dayes togither, the deaw being sufficientlie drawne from them by the Sunne, you may yet keepe them somewhat longer. But the onely pleasure of this secrete is performed in Glasses through whose perspicuitie after some reasonable quantitie of water first remooued or deuided, one may discerne weekely in what plight they are. It seemeth very probable, that if Cherries as they hang vppon their braunches, and before they come to their full maturitie were included in an earthen vessell of some receipte, hauing a partie couer with a hole in the middest, deuided into two equall partes, and euerie breathing place well stopped or luted, and the Sunne sufficiently defended from the pot, that so

the

the fruit would keepe fresh a long time vpon the tree whereon it groweth. This secrete extendeth generallie to all fruite. And it is not much vnlike to the spreading of a Tent ouer a Cherrie tree about fourteene dayes or three weeks before the Cherries were ripe, practised by a Surrey knight not many yeares sithence, whereby he did greatly backward the tree in his bearing, now and then watering the tent in a sunnie day with colde water, whereby the strength of the Sun beames became verie weeake vpon the tree, and when he was disposed to ripen them speedily, he withdrew the vaile, giuing a freer passage to the hote and scorching beames of Phœbus. By the helpe of some one of these, or of some other of the like kinde and qualitie it was my happe to present vnto sir Iohn Allet L. Maior of the Citie of London 8. greene and fresh Artichokes vpon the twelfe day, with a score of fresh Orenges, which I had kept from Whitsuntide then last past, at which time I was also furnished with 200. Artichokes for mine owne prouision, which continued a seruice at my table all the lent ensuing, to the great contentment of sundry of my ghestes who would haue bin right glad to haue dined with the secret onely. It may be that at my next impression I will impart the same, as also the true & perfect ordring of the rose tree, whereby wee may haue the flowers to bud and blow when all other roses haue made an end of bearing. Which conclusion I haue inserted in my conceyted booke of gardening, wherein I haue set down sundrie obseruations, which neither M. Tusser though hee haue written sharpely, nor Master Hill though hee haue written painfully, nor Master Barnabe Googe though hee haue written soundlye, applying himselfe in his vvhole discourse both to our soyle and Clymate, hath as yet discouered to the vvorld,

world, though peraduenture he may know them as well as I, and reserue them for himselfe, and for his secrete friendes. All which are readie for the Presse, and doe onely attende to see if Noahs Pigeon will returne with an Oliue branch, seeing his Rauen hath as yet brought nothing with her.

2 A perspectiue Ring that will discouer all the Cards that are neere him that weareth it on his finger.

A Christall stone or Glasse of the bignesse of a two pennie peece of siluer, or thereaboute, beeing the iust halfe of a rounde Baall or Globe, and cutte hollow within, hauing a good foyle sweetlie conueyed within the concaue superficies thereof, and the stone it selfe neatly polished within and without, will giue a liuelie representation to the eye of him that weareth it, of all such Cardes as his companions which are nexte him doe holde in their handes, especiallie if the owner thereof doe take the vpper ende of the Table for his place, and leaning nowe and then on his elbowe, or stretching out his arme, doe applie his Ring aptlie for the purpose. I haue discouered this secret rather to discorage yong Nouesses from Card-play, who by one experiment may easily ghesse, how manie sleights & cousonages, are dayly practised in our dicing and gaming houses, not doubting but that the general publication thereof wil make the same so familiar with al men, as that I shall not iustly be charged of anie to haue taught old knaues newe schoole-pointes. This secrete is as yet meerly French, but it had beene long since either denized or made English, if there coulde haue beene found any sufficient workman amongst vs, that could haue

haue foyled the ſtone ſo artificially as it ought to bee. There be ſome Engliſh knights that can ſufficiently teſtifie the truth hereof by that which they haue ſeen amongſt the French gamſters.

3 Howe to carrie Gold in a moſt ſecrete maner.

MElt downe ſome Golde, and mixe therewith a ſufficient quantitie of Leade (but then you ſhall bee forced to teſt the ſame before you can recouer your Golde againe,) and this is the moſt ſecret waie of all the reſt, becauſe there will bee no ſhewe or apparaunce of Golde eyther within or without, but the ſeparation vvill bee ſomevvhat troubleſome. But if you vvoulde carrie golde about you in ſuch manner, as that vvithout anie other mans helpe, you maie deuide the Golde your ſelfe from the mettall vvherein you conuey it, then caſt bullets of Golde in a Piſtoll molde, vvhich you may ſo aptly hang vvithin ſome molde of greater boare that maie fitte the peece vvhich you carrie vvith you (vvhich vvill bee alſo a good meanes to remooue all ſuſpicion of art) as that by povvring of Leade rounde about them, they may ſerue inſtead of coares to your greater bullets, vvhich vvith a ſmall heate are ſoone parted in ſunder. But if you vvould carrie coine, then dip your Angels or Crovvnes in molten Lead that is not ouer hote, and conuey them artlie vvithin ſome ſmall and feate Leaden vveightes, that may agree vvith the *Auerde Poiz*. Some commende the povvder of Marble mingled with molten roſen to lap angels or other coine in, before it be through cold. There be alſo diuerſe philoſophicall vvayes for the ſecretting of *Sol* and *Luna*, but thoſe are reſerued for higher purpoſes.

How

4. *Howe to keepe or preserue anie fowle or other peece of flesh sounde, and sweete for three weekes or one whole Moneth together, notwithstanding the contagiousnesse of the weather.*

MAke a strong Brine, so as the Water bee ouerglutted with salt, and beeing scalding hote, perboyle therein the fowle or flesh which you would preserue some reasonable time, that is to say, according to the greatnes and grosnesse therof, then hang it vp in a conuenient place, and it will last a sufficient time without any bad or ouersaltish taste, as I can testifie of mine owne experience. This I thought good to publish both for the better preseruation of mutton, Veale, and Venison, vvhereof a great deale in this lande is yearely lost, in hote and vnseasonable Sommers, as also for the benefite of our English Mariners, vvhich are forced sometime to vittaile themselues in such intemperate Clymates, vvhere no flesh vvill last svveet foure and twentie houres togither, by reason that they haue no meanes to make the same to take salt, which without all question will enter this way and make penetration verie speedily by reason of the hote and fierie spirite of salt thus prepared. Some doe vse to perboyle their fowle, after they haue taken out the garbage, and then do dippe them in Barrowes greace, or in clarifyed Butter, till they haue gotten a newe Garment ouer them, and then they lay them one by one in stone pottes, filling the stone pottes vp to the brim with Barrowes greace or clarified Butter, wherein they doe pricke some Cloues, and sprinckle dried salt vppon the vppermoste face thereof, placing the pottes in some

some coole roome. Some thinke that fowle being filled ful of good wheat & after buried al ouer in wheat, will keepe good a long time. I haue also heard it verie crediblie reported, that a side of venison hath byn kept sound and sweet one whole month together, by lapping the same in a course thinne cloath, and then couering it with bay salt. Qre if it were first perboiled in the aforesaid manner, and then couered with salt as before. I could here adde one line more, whereof euerie letter should be worth an angel to diuers good housekepers in this Land, but that the same would breed both offense and detriment vnto others, for the which cause onely, I haue thought good to keep the same vnder hatches a little longer.

5. *How to defend fresh Water a long time from putrefaction.*

THis is performed by the addition of some small proportion of the oyle of Sulphur with it, incorporating them both togither, whereof I haue long since made a sufficient triall. Some commende the oile of Vitriol to the same end: and seeing my penne hath so vnaduisedly slipt into an Element of so great necessitie, I wil make the Sea-men a little beholding vnto me at their first watering, which being spent, I must leaue them to their brackish waters againe, vnlesse by the helpe of some distillatorie vessell (wherin as also in diuers other of the same kind and qualitie, I haue found maister Sergeant *Gowthrowse*, the moste exquisite and painfull practizer and performer of out times) they can make separation of the freshe part thereof on Ship-boord. Let the owner, Marchant, or Mariner, hauing sufficient leisure to make his pro-

ding of fresh water, before hee beginne his voiage, prepare his water in this manner. First let him fill either some Rhenish Wine fattes, sack buts, or White wine pipes, such as haue beene sawed through the midst, onelie with faire water, these halfe tubs hauing tapholes within three inches of the bottome, at the which after the water hath passed his first putrifaction, and is become sweet againe, he may then drawe it from his residence into a cleane Caske, and by this meanes it will last much longer at the Sea than otherwise, and yet if there were but two or three handfuls of salt dissolued in a pipe of the same water (which would not much offend either the tast or stomach) it would preserue it much more then the bare preparation of the water will doe in the aforesaid maner. Sir *Frauncis Drake* that *Spanish* scourge & *Magnæ spes altera Troiæ*, who hath sought for all the helpes which he might, either in his water or his victual, for the better comfort and reliefe of his Mariners, in one of the last conferences which I had with him, did assure me, that the most putrified and offensiue water that could happen at the sea, would by 24. howers agitation or rolling vp and downe, become sweet and good beuerage. And Captaine *Plat* in whome sir *Frances Drake* for his good partes did alwaie repose great trust and confidence, did vsuallie carrie certein long and thicke peeces of sheet lead with him, which he would cause to bee hanged by lines at the bung-hole euen to the verie center of the vessel, whereby he did attract much of the fecicall part of the water, and the Leades would become very slimie therwith. This he did with often change and iteration, alwaies clensing the leades as they grew filthie, and so with much adoo, he found the water a great deale more pleasing

then

then before. These fewe conceiptes I haue thought good to impart for the benefit of the whole Nation of England, for the which I haue prouided more daintie cates, then it hath been hitherto acquainted with all, *I* doe onlie keepe them in my breast, vntill an honest purueyor may bee rewarded with some honest pencion. *2ly.* what proportion of spirite of Wine, or *Aqua vite* well rectified, will defende water from corruption.

6. A Marchants Compasse, whereby he may knowe vpon what point the wind blowes, in his bedchamber, and in the night time, without beholding the skie or any vane abroad.

FAsten a large vane, to a long yron rod, let the same rise thorough the middest of the roofe or some other part, that may best agree with the roome wherein you mean to place the same, and let the yron stale thereof, come through the seeling of your chamber, and at the end of the rod, let there be a sharpe *index*, that may point vpon a table of wood (which for that purpose must be drawne, with all the parts of the wind vpon it like a mariners compasse) to that wind which bloweth. You must haue diuers staies of yron by the waie as the rodde passeth to keepe it vpright, hauing holes in the midst of them, and wrought with lappets at the sides, wherein to fasten nailes to a long post, which for the same purpose must bee placed within the garret, betweene the seeling of your chamber and the roofe thereof. Note that the *Index* and the edge of the vane must alwaies stand vpon two direct contrarie points.

How to feed & fatten Hens, Chickens, Geese, ducks, &c. with diuers other sorts of fowle, in a more cheap manner, then hath yet beene made knowne or common to the world.

I Know diuers that haue contented themselues, to feed and fatten them with graines onelie, whereof they haue made a great benefit vnto themselues, by reason of the easy price for which they are sold. But if you take the bloud of beasts, whereof y Butchers make no great reckoning, filling stone pottes therewith, whose couers may bee full of such holes, as that the flesh flies in sommer time, may easilie get in and out at the same, you shall finde the bloud by meanes of the flie-bloe, and putrefaction together, wholie conuerted into white and glib worms (which the anglers call Gentils) which will fatten them exceedinglie, & make them eate most tenderlie. A Dutch man that first practised this secret in a Noble mannes house of England, (whose fowle for the tenderneſſe of their flesh, was highlie commended of all his ghestes) had a yearelie stipend of twentie nobles conferred vppon him by his Lord, during his naturall life, for the discouerie of the secret. Yet I could wishe, that these wormes did first scoure themselues, either in mosse, lome, or bran, before they were scatred amongst the fowle: And if notwithstanding this helpe, the foode shall seeme offensiue to our weake stomaches, especiallie being made acquainted therwith before hand, then receiue the same in a better forme and in a sweeter manner at my handes, who haue alwaies desired to giue all the grace which I might to any secret of good vse. Boile this bloud with some store of branne

amongest

amonst it (perhaps graines may suffice, but bran is the better) vntil it come to the nature and shape of a bloudpudding, & therewith feed your foule so fat as you please, and this wil be both a wholsom & a clenly feeding for them. Som commend, carrots, turnips, Parsenips and pompeons, first sodden and then some bran or course pollard mingled therewith. You may feed Turkies with brused acrons, and they will proiper exceedinglie with them. Some to fatten their capons speedily, put them into coopes wherin ech bird hath a seueral roome deuided from the rest, being so straight and narrowe as that the hen or capon may onely feed himselfe and roost therein, not being able to turne his bodie, thereby perswading themselues that wanting motion and exercise he wil soon growe to be fat and of greace. Some do vse to keepe fowle 2. or 3. daies without meat, til they be exceeding hũgrie, and then they giue them their fill. Others doe soke chippings and other crustes of bread in broken beere, or flatten milk, wherewith they do afterwarde feed their capons: out of al these a good huswife will easilie choose both the likeliest and the best.

8. How to write a letter secretlie that cannot easilie be discouered, or suspected.

WRite your minde at large on the one side of the paper with common inke, and on the other side with milck, that which you woulde haue secret, and when you would make the same legible, holde that side which is written with inke to the fire, and the milckie letters wil shew blewish on the other side. Or else rule two papers of one bigneſſe with lines of an equal distance, make the one ful of glasse windowes, through which you must write your mind vpon a se-

cond

cond paper, thē fil vp the ſpaces with ſome other idle words: but if all were made to hang togither in good ſenſe it would carrie the leſſe ſuſpition. Each friend muſt haue one of theſe cut papers to read all ſuch letters as ſhalbe ſent vnto him, & this maner of writing will trouble a good decipherer to bring in to perfect ſenſe. Alſo you may firſt write an ordinary letter that may carry ſome good ſenſe to your friend, but let the lines be wide aſunder. Then betwene theſe lines write your ſecret letter with gall water onely wherein the gauls haue bin infuſed but a ſmall time (for if after you haue writtē therwith there be any ſenſible colour left behinde vpon the paper, you muſt throw away that water and make new.) This being drie and of one colour with the paper, will giue no cauſe of ſuſpition, & the rather becauſe the letter purporteth a ſufficient ſenſe already. Now for the diſcouery therof, you muſt diſſolue ſome coppres in faire water. & with a fine caliber penſill firſt dipped in ỹ coppres water, you muſt artly moiſten the interlining of your letter, and thereby you ſhall make it ſufficiently legible. This is one of the moſt ſecrete waies that I know. But yet the fineſt conceited way of all the reſt in my opinion, is ỹ cloſe cariage of a letter within a lawne or Cambricke ruffe or handkirchief, which a man may weare for his neceſſary vſe without the defacing of any one letter cōtained therein. And this ſerueth moſt fitly for a loue-letter, which may without all ſuſpitiō of friends be eaſily preſented in a hākirchief, to any gentlewomā that ſtandeth well affected to her ſecretary. There is alſo a redy way without changing of the Alphabet to write ones mind ſpeedily vpon paper, & yet the ſame not to be deciphered without the helpe of a rolling pinne of the ſame ſcantling with that whereon it was firſt written.

written. But these two latter conceits (for some reasons best knowne vnto my selfe) I may not so boldly impart as otherwise I would.

9 How to brew good and wholsom Beere without anie Hoppes at all.

SInce my profession is this booke is in some sort to Sanotomize both Art and Nature, without any regard of priuate mens profits, whom it may either escentially, or accidentally touch: I am bolde therefore without crauing any leaue to do good, to renue or rather to confirm & ratifie an ancient opinion & practise, which long since in the great dearth and scarcity of hops many Brewers of this land, haue bin forced to put in vse for ỹ better supportation of their weak & declining estates. But becaũse they failed in proportion (without the which there can be nothing cõplete or absolute) they suffered a good conceit to die in the birth. And no maruel then if wormwood notwithstãding it be a simple so highly cõmended of all the anciẽt & new Herbarists for his great & singular effects in physick, be in a maner vtterly abandoned of all the brewers of our time (except a few ỹ can make a difference betweene 5. s. and 5. li. charge when hops are sold for 50. s. the hundred, seeing as yet not any one of them hath so clarkly wrought vpon this simple as to couer & hide the taste therof, from ỹ wel mouthed Ale-conners of our cõmon wealth. Which weaknes of theirs becaũse it consisteth wholly in the want of a due proportion betwene the mault & other beercorn in respect of wormwood, I haue thought good to set downe a sufficient direction, for such as are wise and willing to doe good both to themselues and to their Countrie, whereby they may easily euen in one dayes practize attaine to the full perfection thereof

Suppoſing

Supposing then that your Wormewood is either cut down in the leaf before it be seeded, or being seeded that it is cut into short peeces, whereby there may be made an equall mixture of the whole buleke togither (for you must note that the seeded toppes are much stronger and more oyly then the rest of the leaues or stalkes) make first a decoction of foure ounces of hops with nine gallons of water (which is the proportion that some Brewers in some sorts of drink doe vse) and when you haue gotten out by ebulition the full strength and vertue of them, keepe the same apart, and begin likewise with some small proportion of Wormewood to the like quantitie of water as before, and when you haue bestowed as much time and fire herein, as you did about the hoppes, then taste each of them by it selfe, and if you finde the same to exceed the first in bitternesse, then begin with a lesse proportion of Wormewood, and so reiterate your worke, vntil you haue equally matched the one with the other, then may you safely proceede by the rule of proportion to a barrell, and from thence to a tun, and so to a whole brewing. Neither let the excessiue bitternesse of Wormewood in his present taste anie thing dismay you, for if you did but taste the decoction of hoppes onely before the mixture of the ground mault (which doth wonderfully sweeten the same) you would think it a verie vnapt liquor to be wrought vp into so pleasing a drinke as our ordinarie Beere doth shewe it selfe to bee. For it is the Hoppe onelie which maketh the essentiall difference betweene Beere and Ale, and that by allaying of the exceeding lusciousnesse of the mault with his bitternes, whereby both vniting themselues together, become a sauorie and wholsome drinke for mans bodie. Which

may

which may bee as well in euerie reſpect performed with Wormwood as with the Hoppe, yea and peraduenture with Centuarie, Artichoke leaues, or *Aloes hipatique*, as ſome workmaſters haue confidently affirmed vnto me. And though the Hoppe be vſuall in drinke, and the Wormwood onely in medicine, whereby ſome may happily be perſwaded, that it is inconuenient for men that are in health to drinke a medicine continually to their meate, yet let this be a ſufficient anſwere to that obiection, that it is the doſe onely that maketh the difference herein. For I can aſſure you in mine owne experience, and by the experience of one of the beſt experienced Brewers of London who yet liueth, that if you giue a double or treble quantitie of good Engliſh hoppes, to an ordinarie guile of ſtrong Beere, you ſhall find the ſame to be a ſufficient preparatiue to your bodie for the beſt purgation that ſhalbe miniſtred after. And this can one of the right honourable Peers of this lande ſufficiently witneſſe, who togither with ſome good part of his retinue, hauing well taſted at a dinner of ſuch Beere, as (by the miſpriſion of the Brewer of Engliſh hoppes for Flemiſh hoppes) was ſo ouerhopped, that both himſelfe and the reſt of his family that was then about him, were ſuddenly ſurpriſed with a great looſneſſe. And this is the reaſon why Venice Turpentine which being miniſtred in a ſmall doſe is giuen for the ſtrengthening of the backe, and to ſtay the running of the reines, yet if it be taken in ỹ quantitie of an ounce at once, it will purge ſufficiently in diuerſe bodies. So then either let there be no more taſte of wormwood then there is of hoppes in our drinke, and wee ſhall finde no difference in effects, but ſuch as ſhall commend and grace the wormwood beyond the hoppe,

or elſe let beere be aduaunced with the hoppe to the bitternesſe of wormwood wine, and ſo we ſhall finde the hop farre to exceede the wormwood in his maligne qualitie. Neither woulde I haue any man to thinke, that I doe either wrongfully intrude vpon other mens poſſeſſions, or preſumptuouſly vndertake a charge which I cannot performe, for I am in by diſcent, and haue continued fiue yeares in poſſeſſion at the leaſt, and therefore am not eaſily to be remoued without a philoſophicall action commenced againſt me. And becauſe you ſhall farther knowe that I haue ſome reaſonable skill in my trade, I dare vndertake without the helpe of any yeaſt at all, to bring ỹ woort either of Ale or Beere to his perfect workemanſhip (wherin it ſhall cõtinue at the leaſt either ſix or ſeuen daies togither) without any intermiſſion, & that only by a philoſophicall ſtirring vp of the fire of nature which ſhall extend and ſpread it ſelfe *à centro ad circumferentiam*, till it haue digeſted the whole body to his perfect ripeneſſe or maturitie. Thus much I haue thought good to publiſh for ỹ credite of wormwood, and for the benefite of this Iland in ſundry reſpectes, which I ſhal not need to particularize at this time becauſe they are ſo commonly knowne to all men. And though I know I may bee ouerweyed either with the Fraunders Merchants, or with the great Hoppe-maſters of Englande whoſe foundation is ſo deepelie laide, that a fewe looſe lines can neither ſhake nor ſtirre the ſame: yet either knowing, or at the leaſt perſwading my ſelfe to maintaine the trueth, before I giue it ouer I will craue the libertie of the ſchooles, *quod fiat controuerſia*. And in the meane time thoſe which will not bee ſatisfied, of the wholeſome and rare medicinable helpes of the one, togither with

the

the weake and feeble vertues of the other, (which was but a Hedgebirde the other daie, though nowe it bee perking so prowdly vpon his poles) I will referre them to the learned Herbals of Dioscorides, Matheolus, Doctor Turner, Dodoneus, Turnizerus, and the rest.

10 Howe to harden Leather so as the same shall last much longer in the suckers of Pumpes then it dooth vnprepared.

THis secret is so necessarie for the whole lande, as that I muste craue pardon of my especiall good friend for the discouerie thereof. Lay such leather as is well tanned, to soake in water wherein there hath beene some store of the filings of yron a long time, or else in the water that hath lien long vnder a Grindstone, into the which such yron as hath beene from time to time ground away, hath fallen, and there setled. This hath beene found to bee a secret of good vse, by one of the Pumpemakers of our time, and if thou canst pumpe out any better vses of this secrete, take them in aduauntage, and remember where thou hadst them.

11 A conceipted Chaffingdish to keepe a Dish of meate long hote vpon the Table without any coles therein.

LEt the Dish bee somewhat deepe, and cause the Chafingdish to bee made of such shape as may best receiue the same, into the which you may conuey a peece of yron red hote, the same beeing of an apt forme to lie in the bottome of the Chafingdish.

This will continue his heate a long time, and if you haue one other spare iron to heat as the first cooleth, you may keepe any dish of meate warme as long as you thinke good. From this ground did those warming pinnes first spring, which of some are called Froes, and being put into their cases, and those cases wrapped in linnen bagges, doe serue to heate beddes with, and to cast one into a kindly sweat. The like deuice is also vsed by others in conueying of such iron pinnes into hollow boxes of wood first lined inwardly with mettall, and iron chests, either to lay vnder their feete where they vse to write or studie in colde weather, or in their coches to keepe their feet warm. The now distressed king of Portugall caused a paire of wooden soles to bee made for a paire of shooes which he had to sit in, which he would warme at his pleasure with *Mars* well rubified.

12 Howe to rost meate more speedily, and with lesse fire then we now do in our common maner.

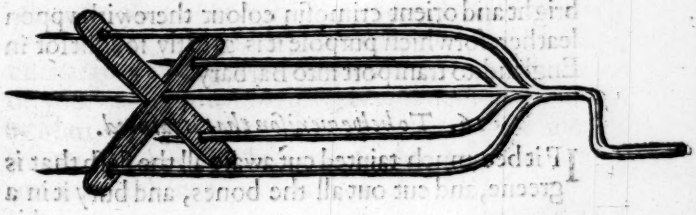
MAke a square and concaue boxe, or else of the fashion of a Cilinder of iron plates, or else of wood lined with those plats long inough and large inough for such and so many ioynts of meat as you meane to rost at once, within which Cilinder let the meat turne as it roasteth. For the reflexion of the heate that is gathered within the boxe will make great expedition. Note that the boxe must onelie couer the meate, because you are to leaue a fire (if neede be) to hang on a pot or kettle ouer the same fire. It must also be close on euery side sauing onely agaynst the fire, and at the sides thereof you must haue slittes to let in the spitte. I haue heard of the like deuise heretofore executed

executed by an outlandiſh potter in burnt clay, for the which he had his priuiledge, but his deuice wanted a couer, it was exceeding heauie, very apt to bee broken, and not ſo ſtrong in reflexion as this metalline deuiſe, eſpeciallie if it be kept cleane and bright.

13. To make a new peece of Walnut tree or Wainſcot to be of one ſelfe-ſame coulour with the old.

FIrſt ſtraine walnut rindes well putrified with ſome liquor, and with a ſponge rubbe ouer your wood throughlie well, and after it is drie, rub the ſame ouer againe with good olde Linſeed oile, & it wil become of an excellent brown colour: then if the other wood which you would haue match with it, do much differ frō the new in colour, you muſt alſo with fine ſand, skoure off all the filth and greace of your olde wood, and then rub it alſo ouer with Linſeede oile. Some take broken beere only. By this meanes I had an old wainescot window, that was peeced out with nevve wainſcot by a good workeman, and both becam verie ſuteable and of one colour.

14. How to turne 5. ſpittes at once with one hande, whereby alſo much fier is ſaued.



FAsten 5. round spittes together, like the teeth or tines of a mole-speare, with a handle in the center of them, let them be placed in a reasonable distance the one from the other, according to the bigneſſe of the iointes of meat that you would roast vpon them, (I take them to be moſt apt for fowle) you muſt alſo haue a croſſe of yron, hauing a hole in euerie corner therof, to receiue the ends of theſe ſpits, which may be propped with a ſtaie behind that it fall not backeward. Vſing theſe ſpits, you ſhall not neede to rayſe your fire vppon ſuch high raunges as otherwiſe you ſhall be forced to doe, when one ſpit is placed directlie aboue another. This ſecret I haue borrowed out of Pope *Pius* the v. his kitchin.

15. A probable coniecture at the compoſition of hard Waxe.

I Am verilie perſwaded, that the eſſentiall part, if not the whole bodie thereof, is made of the gum *Lacca*, peraduenture refined a little, or incorporated with ſome other apt bodie. For I haue ſealed therewith oftentimes, and doe find the ſame to agree with hard wax, in the perfect taking of the impreſſion of the ſeale, in the manner of the burning, in the ſmell, and in brittleneſſe. It onely differeth in cleerenes and colour. I haue heard that the Barbarians doe make a bright and orient crimoſin colour therewith vppon leather, forwhich purpoſe it is greatly ſought for in England, to tranſport into Barbary.

16. To helpe veniſon that is tainted.

IF it bee much tainted cut awaie all the fleſh that is greene, and cut out all the bones, and bury it in a thin

thin olde course cloth a yard deepe in the ground for 12. or 20. houres space, and it wil bee sweet enough to be eaten as I am enformed by a Gentlewoman of good credit, and vpon hir owne practise.

17. *How to make a Pistol whose barrell is two foote in length to deliuer a bullet point blank at eight skore.*

Rifle Barrel

A Pistoll of the afore said length and beeing of petronel bore, or a bore higher, hauing eight gutters somewhat deepe in the inside of the barrell, and the bullet a thought bigger then the bore, & so rammed in at the first three or foure inches at the least, and after driuen downe with the skowring stick, will deliuer his bullet at such distance. This of an English Gentleman of good note and for an approoued experiment.

18. *A peece whereby to performe some extraordinarie seruice either by Sea or land.*

Buccaneers

CAuse a long barrell to be made and of the bore of a Tennis ball, of fiue or sixe foot in length and well stocked, hauing within twelue inches of the mouth thereof, a hooking iron of foure inches in length, forged to the neather part of the peece, by which hooke you may staie your peece by som raile, or other peece of timber, whereby you may safelie discharge the same, without feare of any recoile vpon you. I leaue the full vse thereof to be found out by Martiall men. This inuention I hadde of the fine lymner of Lambith, beeing a Gentleman of good conceipt in all ingenious deuises.

To

19. To make greene wood to burne cleere, at the farther end of the Ouen.

IF you burne greene wood in an ouen, it burneth somwhat cleere toward the mouth of the ouen but commonly black & deadish at the further end, wherby the ouen is neuer sufficientlie heated to bake well. You shall find a remedie thereof in this manner. Deuide the mouth of the ouen into foure equall partes, and cause a bar of yron to be made as long or somewhat longer than the mouth of the ouen, & in bredth one exact fourth part thereof. Fasten this bar ouerthwart-wise in the middle point of the ouen mouth, and this will make a partition, betweene the fire and the aier, so as the ayer will passe vnder the bar to kindle the fire, and the flame will issue ouer the barre, and so the smoke which before did choke the fire will also haue his passage.

20. How a man may walke safelie vpon a high scaffold or peece of Timber, without danger of falling.

THis is easilie performed by wearing of a paire of spectacles, whose sightes must be made so grose, as that he which weareth them may not discerne any thing a farre off, but at hand onely. For it is the sight onely of the steepenesse of the place, that bringeth the feare, and ouerturneth the braine. By this means I haue heard that the English man which displayed an ancient vpon a scaffold neere the top of the pinacle of Paules steeple, did helpe himselfe in his desperate attempt.

21. A round ball of Copper or latton, that will blow the fire verie ſtronglie, onely by the attenuation of water into ayre, which deuice will alſo ſerue to perfume with.

MAke a round ball of Copper or Latten, of ỹ bigneſſe of a ſmall bowle, ſoder thereunto a rounde pipe or necke, of three or foure inches in length, and ſomwhat leſſe than a gooſe quil, at the end whereof, in the manner of an elbowe, ſoder on a leſſe pipe no bigger than a ſtraw, whoſe vent in the ende may not much exceed the bignes of a pinhole, let al the ioints and ſides be ſodred with ſiluer ſoder, heate the ſame well in the fire, and then put it into a veſſel of cold water, and it will ſucke ſome of the vvater vnto it, you may heate the ſame ſo often, till by the peize thereof you may bee aſſured that it is more then halfe full. Then ſet this ball vpon a few glowing coles, and you ſhall finde the ſame to giue a very ſtrong blaſt againſt the fire which you mean to kindle, directing the noſe of theſe bellowes towards the ſame. I make no queſtion, but that it is poſſible with a verie ſmall helpe to melt dovvn either gold or ſiluer with theſe bellows, and that the ſame may be made ſo large as that they wil blow one whole houre together, without anie intermiſsion. If you make a little round ball of ſiluer in this maner, only with a ſmall and ſtreight pipe, riſing out of the bodie therof, you may put ſome

roſewater or ſome other ſweet ſenting water therin, and therewith perfume your chamber, and by this meanes a ſmall quantitie of ſweet water will be a long time in breathing out.

22. How to erect or build ouer any brooke, or ſmall riuer, a cheape and woodden bridge, of 40. or 50. foote in length, without faſtening any timber work within the water.

PEece the timber work in ſuch ſort, as that it may reſemble an arch of ſtone, make the ioints ſtrong, and binde them faſt with crampes or dogs of iron, let this bridge reſt vpon two ſtrong pillers of wood at either end, both being well propped with ſpurres, & at either ende of your bridge make a ſtrong buttreſſe of bricke, into the which you muſt let your pillers and ſpurres, that by no meanes they may ſhrinke or giue backewarde, then planke ouer your bridge and grauell it and it will laſt a long time. This is already in experience amongſt vs.

23. A cheape Lanterne, wherein a burning candle may be carried, in any ſtormie or windie weather, without any horne, glaſſe, paper, or other defenſatiue, before it.

MAke a foure-ſquare box, of 6. or 7. inches euerie waie, and 17. or 18. inches in length, with a ſocket in the bottome thereof, cloſe the ſides well either with doue tailes or cement, ſo as they take no aire, leaue in the middeſt of one of the ſides a ſlit or open dore, to put in the candle, which from the bottome to the toppe thereof may containe 6, or 7. inches in length,

length, and twoe and a halfe in bredth, place your candle in the ſocket, and though it ſtand open and naked to the ayre without any defenſe, yet the winde will haue no power to extinguiſh the ſame. The reaſon ſeemeth to be becauſe the box is already full of ayre, whereby there is no roome or place to conteine any more, neither can the ayre finde any thorough paſſage, by reaſon of the cloſeneſſe thereof. The ſocket would be made to ſcrew in and out at the bottom and then you may put in your candle before you faſten the ſocket. This is borrowed of one of the rareſt Mathematicians of our age.

24. How to plom vp a horſe, and to make him fatte and luſtie, as alſo howe to keepe a Iade from tiring by the way, and to make him to foame at the bit.

TAke *enula campana*, Comminſeed, Turmericke & annis ſeeds, of each a pennieworth, and ſeeth them well (with three heades of Garlike amongeſt them well ſtamped) in a gallon of Ale, then ſtreine it and expreſſe as much of the ſubſtaunce as you may well wring out, and giue your Horſe to drinke therof bloud-vvarme a full quart at once, then ride him til he be hot, then ſtable him, litter him well, and currie him vntill hee bee colde, doe the like two or three morninges together, and ſo turne him to graſſe, and he will thriue woonderfullie in a ſhort time. Some commend a handfull of grunſell ſodden in the afore-

ſaide ale with the reſt of the ingredientes. But if you keep him in the ſtable, giue him to eat in his prouender the rootes of *Enula campana* with ſome commen ſeedes both beaten togither, or ẏ *Enula campana* ſmal ſhred, for 14. daies together, and it wil make a leane Iade to thriue more in one moneth, then otherwiſe he would doe in three. And when you ride abroade vpon a hired Hackney, carie a good quantitie of the powder of *Enula campana* with you in ſome leather bag, and when others doe baite their horſes in their ordinarie manner, your horſe being firſt well walked, littered, and rubbed, giue him a handfull of this powder in a quart of ſtrong ale with a horne, and tie his head high to the rack, and you need to giue no other or verie little prouender vntil night, then let him bee well meated, and giue him in the morning two peny vvorth of bread, and his ale with the povvder, but water at night. This a friend of mine yet liuing, did learn of a good fellow that had beene a ranke-rider in his daies, by whoſe meanes though his hackney tired at Briſtow, yet this companion for his better encouragement, ſeeing him out of all heart, by reaſon that hee was like to loſe ſo good companie as then was gathered together, he exchaunged Horſes vvith him, and brought the Hackney (by the meanes aforeſaide) verie quicke and liuely vppe to London. Alſo if you tie a prettie bunch of Peni-royall about the bit within the Horſes mouth, the Horſe champing thereon, will foame gallantlie, and trauell vvith muche more courage. Another Gentleman, who alſo attendeth vppon a verie Honourable perſonne, tolde me, that whenſoeuer hee founde any Iade to tire vnder him, hee woulde preſentlie take off his Saddle, and vvith a good quantitie of *Arſeſmart* (which is an hearbe

that

that groweth almoſt in euerie Ditch and ſtanding Water) rubbe him well on the backe vnderneath the Saddle, and aftervvarde lay a good quantitie of *Arſeſmart* vndet the ſaddle, and ſo ride him any reaſonable iourney. Theſe ſecrets I thought good to diſcouer for the benefite of all Engliſh trauellers, and I hope they are true becauſe my authours are aliue, and ſpeake of their own experience, and not by bare report from others, they doe alſo carrie great probabilitie with them. But nowe from the horſe to the Rider.

25 A ſpeedie or preſent drinke which trauailers may make for themſelues, (ex tempore) when they are diſtreſſed for want of good Beer or Ale at their Inne.

TAke a quart of good water put thereto fiue or ſix ſpoonfuls of good *Aqua cõpoſita*, which is ſtrong of the Annis ſeedes, & one ounce of Sugar with a braunch of Rofemarie, brew them a pretie while out of one pot into another, and then is your drinke prepared. Or if you leaue out Sugar it will be pleaſing inough. I haue bene crediblie enformed, that diuerſe gentlemen of good credit when they trauell abrode, and cannot like the taſte or reliſh of their drinke, that they vſe no other then the aforeſaide compoſition, and finde the ſame both to refreſh and coole them verie well, neither are they troubled with the rawnes of colde water, by reaſon that it hath receiued ſome correction from the *Aqua Compoſita*, and that the Annis ſeedes doe giue a delicate taſte vnto it. It were not amiſſe for all ſea-men to carrie ſome ſtore of *Aqua Vitæ* with them, that when their Wine, Sider, Perrie, and Beere are ſpent, they may tranſmute their water into the ſaid drinke.

26 How any man may safely put his finger or hand into molten lead, without any danger of burning.

TAke of quicke siluer one once, Bole Armoniack of the best two ounces, Camphire half an ounce, common *Aqua vitæ* two ounces, first beate, and then mingle all these well togither with a pestle in a brazen morter, then annoint your hands al ouer thrughly well with this ointment, & be sure that your hands are cleane without itch or scabbe. I did see a Dutchman called Haunce, a prety nimble Chimist, who after he had set some lead on the fire in a melting pot, till it became blewish and exceeding hot, hee stirred the same first with his forefinger vp and downe, pretending to see whether it were not too hot to endure in the palme of his hande, and afterwards telling his fellow that it was of a good temper, he caused him to poure the same out being some half pound in weight into the palme of his hande, first prepared as before, and presently he poured it into his other hand, and so out of one hand into another fiue or sixe times together, till in the ende he threw the same cold vpon the ground. This hee did for a pot of the best Beere in a garden in Southwarke about ten or twelue yeeres sithence, in the presence of my self and diuers others, at which time I writ the receit euen as I did both see him make it, and vse it my selfe, disbursing the charge both of the Beete, and the ingredients.

27 How any man may hold a hot iron barre in his hande without burning his flesh.

DIppe your hand in molten glewe (take heede the glew be not too hot) & presently strew the pow-

der

der of horne burnt to aſhes vpon the glew, then dip your hand againe in the glew, and ſtrew more of the ſaid powder thereon. Note that the thicker your bar is, the thicker cruſt you muſt make vpon your hande. This I learned of an olde and skilfull man that yet liueth, and aſſured me that hee had made often triall thereof. *Qre.* if this be not a good deuiſe to defende mantletrees, and other peeces of timber that ſtande neer the fire from burning. Take an equal proportion of fiſh-glew, and Alom, mingle them well together, the glew being firſt diſſolued in wine vineger, then parget ouer whatſoeuer thou wilt with this compoſition, and throw the ſame into the fire, and it ſhall not burne. This out of the ſecrets of *Wickerus 11a.* See *Cardane de rerum varietate. 644.*

28 Sweet and dilicate Cakes made without either Spice or Sugar.

SLice great and ſweet Parſnep rootes (ſuch as are not ſeeded) into thin ſlices, and hauing waſhed and ſcraped them cleane, then drie them and beate them into powder, ſearcing the ſame through a fine ſearce, (*Qre.* if there might not be ſom means found out for the grinding of them, whereby to make the greater riddance or quantitie,) Then knead two parts of fine flower with one part of this powder, and make ſome cakes thereof, and you ſhall finde them to taſte verie daintilie. I haue eaten of theſe cakes diuerſe times with verie great good liking.

29 How with one candle to make as great a light as otherwiſe with two or three of the ſame bigneſſe.

CAuſe a round & double Glaſſe to bee made of a large ſize, & in faſhiō like a globe, but with a great round

roundé hole in the toppe, and in the concaue part of the vppermoſt Glaſſe place a Candle in a looſe ſocket, and at ſome hole or pipe which muſt bee made in the ſide theteof, fill the ſame with ſpirite of Wine or ſome other cleare diſtilled water that will not putrifie, and this one Candle will giue a great and wonderfull light, ſomewhat reſembling the Sun beames. Note that this Glaſſe is not much vnlike to thoſe Wine drinking bolles that haue falſe bottoms, wherein Sacke, or Claret wine may bee conueyed with faire water onelie in the vppermoſt part of the Cup, whereby a plaine meaning man may eaſilie be deceyued. This conceipt of a Candle, a Gentleman of good account, and my eſpeciall good friend did learne in Venice, where hee was ſhewed the ſecrete for a fewe French Crownes. *Qre.* What light a Candle woulde ſhewe if it were placed in a large Cilinder like vnto a halfe Lanterne, all of Latten kept bright and gliſtring, the ſame being inwardly garniſhed with diuerſe ſteele Looking-glaſſes, ſo artificially placed as that one of them might reflect vnto an other. I knewe an expert Ieweller, dwelling (whileſt he liued) in the Blacke-friers, who had a Glaſſe with a round bellie, and a flat backe ſtanding vpon a foote, with a Lampe placed ſo at the backer part thereof, as that the light thereof was iuſt oppoſite to the center of the bellie through which (the Glaſſe being firſt filled with ſpirite of Wine) there would ſo brim and glittering light appeare, as that by the helpe thereof he would graue anie curious worke in golde as well at midnight as at the noone day.

30 How we to make great postes and peeces of timber that are to be driuen into the earth, or piles for water works to last much longer then otherwise they would.

I Haue heard that the Venetians whose houses doe ſtand vpon piles of wood, do vſe to burne or ſcorch the timber in a flaming fire, continually turning it round with ſome engine, vntill they haue gotten a blacke and hard colie cruſt vpon it, and ſo they finde it to laſt ſome hundreds of yeares, as it hath beene reported vnto me. A Kentiſh knight of good woorth did alſo aſſure me, that they vſe to burne in this manner the endes or poynts of their poſtes, which they drive into the grounde when they make their pales and other encloſures. This ſecret carieth great probabilitie with it, for that by this meanes the outwarde part of the wood is brought both to ſuch a hardneſſe and likewiſe to ſuch a drineſſe, *vt, cùm omni putrefactio incipiat ab humido*, for want of moyſture and fappineſſe, neither the Element of earth, nor yet of water can make any penetration into it.

31 To make all the choppes and cleftes of greene timber to cloſe againe.

ANnoint or ſupple well the greene timber which you doe expoſe into the ayre, with the fatte of powdred beefe broth, and ſoake it well with ſponges or penſils into the cliftes or choppes thereof, do this twice ouer, and you ſhall finde the ſame to anſwere my report. Some Carpenters doe vſe to cloſe vp the great choppes of Wood with Greace and Sawduſt mingled together, but the firſt I take to bee the

better way, for that I haue thereby seene the timber to come so close togither, as if it had neuer beene windshaken at all, but note that the timber must bee thus prepared in time, and whilest it is greene.

32 How to graue any armes, posies, or other deuise vpon an egge shel, & how to through-cut the same, with diuers works and fancies, which will seem very strange to such as know not the maner of the doing thereof.

DIppe an egge in suet being molten, first the one halfe, and then the other, holding the same betweene your thumbe and forefinger when you dippe it, let the same coole in your hand, and beeing colde, with a sharpe bodkin or some other instrument of iron, worke or graue in the suet what letters or portrature you wil, taking away the suet clean, & leauing the shell bare at the bottom of your worke. Then lay this eg thus engraued in good white vineger or strong alliger in a Glasse or stone Potinger, for some fixe or eight houres, or more, or lesse, according to the strength and sharpenesse of the Vineger, then take out the egge, and in water that is blood warme dissolue the suet from the egge, then lay your egge to coole, and the woorke will appeare to bee grauen in the shell of a russet colour. *Sæpius probatum.* And if the egge lie long inough in the vineger after it is so grauen, and couered with suet as before, the letters will appeare vpon the egge it selfe being hard sodden, or else if you care not to loose the meate, you may picke out the same when the shell is through grauen, and so you shall haue a straunge peece of worke performed. Those two latter conceiptes I learned of late, but I haue not prooued them, but in all likelihoode they

they should seeme to bee true.

33 An apparance of strange formes in a Glasse.

GRind an Angell weight of fine leafe golde, with two ounces of *Sal armoniacke* vpon a marble till you can scarcely discerne any golde, then take two parting Glasses each of them containing a pinte, in the one put the ground golde with foure ounces of good strong water, and in the other glasse put foure ounces of Mercury with eight ounces of *Aqua fortis*, set both these glasses in warme ashes vpon some furnes, till both the bodies be dissolued, then take a parting glasse of a quart, and whilest the substances being dissolued are yet warme, poure the same into your quart glasse, but first you must put in your strong water wherein the Mercury was dissolued (I write according to the practize which I did see) and then poure the other water vpon that, and presently you shal see an extreeme thick blackenesse, which a Dutch Alchimist and practiser of phisicke that died of ỹ last yeres plague (vpon the discouery therof) wold maintain to be that *nigrũ nigro nigrius*, so much spoken of amongst the philosophers, & after a while when the water began to cleare, then he termed it *cælũ christallinũ*, after that did appeare a continual rising & falling as it were of flakes of snow which continued certaine houres, & then as it were a hil al couered with pearle, & that he called *sepulchrũ Mosis*. Al which composition hauing stood one night, there appeared diuerse spires like blades of corn or grasse but of a whitish colour in the bottome of the glasse, yet in the end, by a reuerberatory furnesse hee turned al this great matter into a precipitate, and therefore it must needes

bee a Philosophicall woorke that did ende in so great an *arcanum*. Yet the same if it bee truelie perfourmed is woorth the beholding, if it were to no other end, then to put vs in minde of Democritus his *Atomi*, which conquring together, at length engender bodies. There is a like woorke to bee perfourmed in siluer, whereby I haue seene seuerall fourmes and shapes of things somtime to spring vp suddenly, and somtimes in a night or two, the same somtime representing trees, shrubs, hedges, and flowers, and diuerse other shapes, and notwithstanding many practises to find out the reason of the differences of these forms, I could neuer yet make any one forme twise, but that Nature would play so infinitly, and at her owne pleasure herein, as though I did obserue a iust proportion of all the ingredients of this magisterie, yet (because she found some difference of peize when shee weyed them in her owne ballance) I had alwayes a seuerall and differing forme from the last which I made.

34. A portable ynke to be caried in the forme of a powder, in any paper, leather purse or boxe.

IN Foster lane or amongst the refiners of golde and siluer, get a large panne, such as they make their testes of bone ashes in, it is a deep dish made of burnt clay, into this put so much of the fattest and best coppres that you can get, set the same vpon a treuet ouer a reasonable fire of charcole, at the first it will dissolue into a water, & after by continuing of your fire it will grow drier and drier, stir the same continually with a woodon spattle into the midst of the pan, and keepe it from burning or hardning to the sides of the pan, and when it is throughly calcined into a whitish

powder

powder and before it become redde, take it from the fire, then weigh out of this calcined coppreſſe one part, one part of the beſt gals wellpowdred, and half a part of the cleereſt gum *Arabicke* well powdred alſo, ſearce them all through a fine ſcearce, the finer the better, and it will not be amiſſe if you vſe a lawne ſearce herein. Keepe this powder in cloſe boxes and in the warmeſt places of your houſe, and when you wil write therewith, put ſome of the powder into a ſpoone, adding thereunto ſome water, wine, beere, or vinegar, and ſtir it well together a prettie while, and when it hath ſet'ed a little, you may write therewith, and as it drieth, it will growe blacker and blacker vpon the paper till in the ende it become verie legible. This I haue often proued. Some commend dry Litmas ſcraped in water, and forced to a ſolution, wherwith to write in ſtead of a blew inke. But I thinke it not amiſſe, firſt to diſſolue ſome Gum *Arabick* in the water to keepe your inke the better from ſinking. Theſe ſortes of inkes are verie good for the ſea, becauſe glaſſes are ſubiect to breaking and though you put your inke in leaden pots, yet in time it wil thicken exceedinglie, and then euerie man knowes how troubleſome it wil be to the writer. I could here ſet down ſome other ſorts of inkes that be not common, wherof ſome will fall from the paper in a few daies, and others would corrode or fret the paper in peeces, but becauſe I know but one good vſe of them all, and for that I feare ſo many bad vſes, or rather abuſes, would follow if they were known and made common, I will rather ſeeme ignorant of them, then become an author or helper vnto badde men in their bad purpoſes.

35. *How to write both blew and redde letters at once, with one ſelfe-ſame Inke and pen, and vpon the ſame paper.*

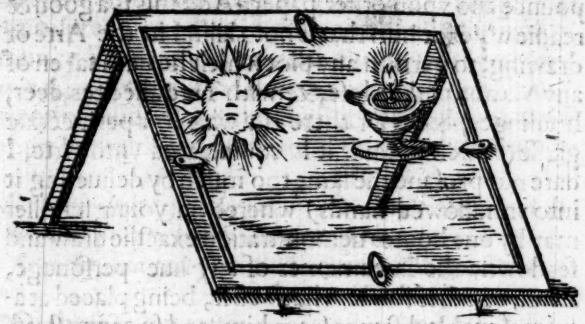
PVt the quantitie of a Haſell nut of Lytmas blewe to three ſpoonfuls of conduit water, wherin ſome Gumme *Arabicke* is diſſolued, and when it hath ſetled the ſpace of one hower, if you write therewith you ſhall haue perfect blewe letters, and if you dip a penſill in the iuice of Lymmons, that is drained from his reſidence, and do wet ſome part of the paper ther with, and after let your paper drie againe, and then write vpon the place where the iuice of the lymmon was laid, with your former blew inke, the letters will ſuddenlie become red, and in all the reſt of the paper the letters will be blew. And ſo you may alſo make partie letters and other fanſies, if you wet your paper accordinglie. *Sæpius probatum.*

36. *To keepe Inke from freezing and moulding.*

PVt a few drops of *Aquavitæ* therein, and then it wil not freeze in the hardeſt Winter that can happen, and in Sommer time if you put ſalt therein it will not waxe mouldie as I haue beene crediblie informed.

37. *How to draw any groſe pattern of any Beaſt, fowle, Tree, Fruit, Flower, Perſonage, or other picture whatſoeuer.*

YOu muſt haue a deske of the cleereſt and eueneſt glaſſe that is to be bought, yet I haue ſeene our Suſſex



Suſſex glaſſe to ſerue the turne ſufficientlie (and ſom vſe the skinne of an abortiue Lambe, finelie dreſſed and ſtreined ſtiffe vppon a frame) vppon this Deske you muſt faſten the patterne at the foure endes with a little vvax, vpon the which patterne, lay the fineſt paper that you can get for money, and wax that alſo vpon the patterne as before. Then place your deske with the back therof againſt a brim or perfect light, that hath no other oppoſit nor ſide light to hinder it, and I thinke it beſt of all againſt a window where the ſun ſhineth) and the pattern wil ſhewe all the lineaments thereof very perfectly through the fine paper, vpon y which you may trick, either with a fine pointed cole, black lead, or pen. *Qre.* Of a ſufficient light to be placed vnder the deske by ſeuerall lampes, if thereby alſo in a darke night, you may not diſcerne howe to performe your worke perfectlie. Some in ſteade of this deske doo oyle a paper and lay it vpon a patterne, and draw thereon with blacke lead, and then prick the pattern full of holes & ſo pounce it vpon another paper. And ſome haue paterns of beaſts,

birds,

birds, flowers, &c. prickt out in paper, and those they pounce also vpon other paper. And this is a good & readie waie for him that is not skilfull in the Arte of drawing, to garnish any plot which he hath taken of any Manor, parke, close, &c. with Trees, hedges, deer, housinges, &c. But there is a waie by a perspectiue glasse (which because it is consecrated vnto Arte, I dare not profane the same too much by deliuering it into vnhallowed hands) whereby a young scholler may by one houres demonstration exactlie draw and set downe the lineamentes of any liue personage, Beast, or other fowle whatsoeuer, being placed at any reasonable distance from him, and so of any statelie edifice or building, fort, bulworke, or fortification, and of al manner of engines, whatsoeuer the wit of any worke-maister is able either to actuate in the great or to performe in modell onely. Yea al manner of drawne patternes whatsoeuer, bee they neuer so great, may by the helpe of this glasse (wherof I haue gotten the vse at the hand of my deare friend) be lessened and brought within as narrow a Compasse as a man would reasonablie wish or desire. And whosoeuer shall aduisedlie practise by the helpe of this glas, may in one moneths space be able to drawe any patterne by hand onely, without praying in aide of the same any more. So likewise it is possible by waie of reflexion, for any man to behold in a looking glasse, and that also in his priuate studie, al the gestures and actions whatsoeuer any personne shall make or performe, in any roome or corner of his house, as also to see euen in the bottome of his seller, whatsoeuer is done vpon the top of Paules steeple, or any other steeple within London, so as his dwelling bee within the Citie or the Liberties therof, or within any competent

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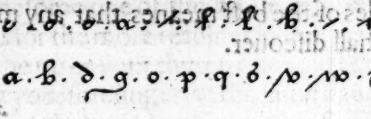
petent number of miles distant from the same. But learned doo see that euerie Author is in danger to be censured according to the particular iudgement of euery Reader, and because *Stultorum plena sunt omnia*, I will not extend the credit of this secret to his vtmost bounds, but this shall bee sufficient for the weake faith that reigneth in the world at this time.

30. Some helpes for the speedier and true making and breaking of any letter, as also how a learner may write straight, and giue some prettie grace vnto his letters.

FOr the speedier attaining to any written hand, let some perfect wrighting maister, (and I knowe not whom I should heere commende before mine olde Schoolemaister, Maister *Conradus*, that teacheth ouer against saint *Anthonies* schoole) deliuer a few copies written, or rather broken in this manner. Let him diuide or breake each letter into so many partes, as he hath cause to make any little pause or addition before hee finish the same, which is nothing else but the vndooing & disioining of the same, that a yong scholler may the better see, which ware the same was made vp and brought together. As for example, the Secretarie small a, hath six partes before it bee made vppe, the b. c. and d. haue foure and some more, and some lesse, and for the better vnderstanding of my whole meaning, I would haue caused the whole Al-



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phabet to haue beene cut, and so printed in this manner, but that I could not finish the doing of it, and also for that I knew that maister *Conradus* will sufficiently performe the same with his pen, to any that shall bee willing to requite his paines, and hee hath already written some such coppies for my children. Also it giueth a great grace to your writing, if the whiteth of certeine letters bee made of one equall bignesse with the o. supposing the same were all round, as the white of the b. of the a. p. y. v. w. x. q. d. g. and s. And for the writing straight, and true breaking of the letters, cause a paper to bee ruled all ouer, with great lines, drawne with a text penne, vpon which ruled paper you must lay a leafe of the finest paper that can bee gotten, such as they doe commonlie sell for two shillings, foure pence the quere, and let the scholler write vpon the shadowe of the text lines, or else if the neather paper be ruled full of small lines, when hee writeth vpon the fine paper, let him haue care, that those small lines may cut or deuide all those letters which he maketh, in the middest, and hee shall finde great vse thereof. Some draw the letters first in black lead or red inke, and then let their scholler run ouer them with blacke inke, till they haue brought their hande in vre with the shape and fashion of the letters. There is no doubt, but that some willing and carefull Schollers will finde some of these helpes, as good as the Ace of heartes in their wrighting, though other heedelesse Drones, will scarce make the Ace of Diamondes of the best meanes that any maister or Teacher shall discouer.

39. Gall water very necessarie to mingle with your Inke, as it groweth thick in your standish or inkhorne.

SLice or beat some of the best Galles, and put them in a glasse of faire water, and when they haue giuen some reasonable tincture to the water, you may mix the same with your inke as it thickneth: this is a more kindlie waie, then to vse either faire water, beere, or vineger in stead thereof. But when the water beginneth to be ouer olde and out of date, you must then throw away the same and make fresh.

40. How to renew olde letters, that be almost worn out of sight.

THis is performed by rubbing them ouer carefully with the gall water aforesaid being wel prepared, for that will strike a fresh hew again into the old and outworne Coppres. These two secrets I learned verie lately of a skilful & well conceipted gentleman, who hath made some practises thereof himselfe, and the first I can warrant by mine owne triall.

41. How to speake by signes only without the uttering of any word.

DEuise 24. signes, whereof euerie one may represent some one of the 24. letters, but place your vowels for the more readines in this maner, First A. vpon the tip of your thumb on the left hand E. vpon y tip of your forefinger on the same hand, & so of the rest, so as when you lay the *index* or forfinger of your

right hand on the tip of your thumb on the left hand, the party with whom you shal conferre in this maner, may alwaies note the ſame for an A. the reſt of the letters which be conſonants, may be vnderſtood by touching of ſeueral parts of your body, or ſeueral geſtures, countenances, or actions, as an herſe for a B. a croſſe made on the forehead for a C. a Philip for a D. and ſo of the reſt. I haue ſeene a gentleman together with a gentlewomā that were very ready in their conceited alphabet, to deliuer their minds each to other in this maner, when as not any of the ſtanders by vnderſtood either word of letter of their meaning. And I hold the ſame a neceſſarie arte to be practiſed of ſuch as doo naturallie lacke their ſpeech, whereby they may be vnderſtood of others, which otherwiſe could haue no mutual conference with them.

How to paint or limne with the colours that are taken from herbs or flowers.

SOme drie the leaues of herbes or flowers, which carrie any deep colour in them, and if there be ſeuerall colours vpon one leafe, they deuide them, and keep each colour by it ſelf, grinding the ſame vpon a Marble, and after keepe it in cloſe glaſſes or leaded pots, ſufficiently defended from the aire. If you grind the leaues of a white roſe with a little Allome, it will giue a yellow colour, and ſo wil the purple part of the leafe of the flower deluce, ground with a little lime, yeeld a good and perfect greene. Some expreſſe the iuice of herbs or flowers, and then euaporat either in balneo or in the ſun ſo much as wil aſcend, ſpreading it thinly vpō the bottoms & ſides of ſmall diſhes, & after, then ſet ỹ ſame in the ſun to dry, & then grind it

with gumme water as they haue cause to vse it. Some dilute the moist, and some the drie leafe with faire water, and so soone as the beautiful hew of the leaues begin to vade, they drein away the water, and make an addition of fresh leaues thereunto, and so change their leaues often, that they may purchase to themselues nothing else but the liuelie and bright incture of euerie hearbe or flower. These two colours of the Rose, & Flower-deluce I learned of maister Bateman sometime the person of Newington a most excellent lymner.

CAuse 4. large dice of bone or wood to bee made, and vpon euerie square, one of the small letters of the croslerow to be grauen, but in some bigger shape and the child vsing to play much with them, and being alwayes tolde what letter chanceth, will soon gain his Alphabet, as it were by the way of sport or pastime. I haue heard of a pair of cards, whereon most of the principall Grammer rules haue been printed, and the schoolmaster hath found good sport thereat with his scholers.

44 To graue and inlay colour into Sol, Luna, Mars, or Venus, to shew in the nature of an Ammel.

FIrst couer your mettall with a crust of waxe, and with a fine sharpe toole when the same is cold, cut out the shape or proportion of what letters or other portrai-

portraiture you please and of some reasonable largenesse, then poure some strong water in those emptie places, and when you find them deep inough grauen, mingle Orpiment and Masticke melted together for a yellow colour, and Vermilion with Masticke for a red, and so of all other colours. Now when your Masticke hath bin molten together with any of the aforesaid colours, let it coole, and beat the same into powder, and lay of that powder within the grating, & after lay the mettal vpon the fire, til the masticke melt, & it will remain fast and firme therein a long time. This of a Iew that yet liueth for ought that I know.

45 To make bad paper to beare yoke in some reasonable manner.

RVb your paper well ouer with the fine powder or dust of Rosen and Sandrach mingled in equall parts before you write therwith. Note that you must tie the powder hard in a rag of Laune or thin Cambrick, and therewith rub the paper throughly well. This is a necessarie secret for students, whereby they may note in the margentes of their bookes if the paper should happen to sinke, which is an especiall fault in many of our late yeere bookes of the Law.

46 To make an egge to stande vpon an ende without any helpe at all.

Columbus

THere is an olde tale of a good workeman who made an egge to stand in salt vpon an ende, but here the same is more artly performed, and yet without any such supportation. Holde an egge in your right hande, and with your fist giue three or foure good strong blowes vppon your leste arme, or

vse

vse anie other deuise by agitation or shaking, vntill you haue broken the yolke, and so made the white to mingle confusedly with it, and then it will presently stand vpon the broad end on an euen table. It should seeme that before the breaking of the yolke, that the yolke did hang playing or tottering within the white, whereby the egge could not be made to stande speedilie without this deuise. And yet I heard a Gentleman whom I dare beleeue in a greater matter than this, affirme that hee hath diuerse times caused an egge to stande alone by peyzing it to and fro betweene his handes, till in the ende it stoode vpright without anie other helpe. But the first is the readier way.

47 To harden the white of an egge into an artificiall gum.

BEate the whites of diuerse egges into a thinne and cleare Oyle or water, put the same into bladders, and hang them in your kitchin Chimney where a fire is vsually kept in the day time, and in a few daies the same will become as hard as gum Arabicke. This I haue often proued. Some perfome the same in the Sun onely. As to what vse this gum will serue

Multa autem alia mandauit scriptis exagitabis, vt videas an impleat, inde in ollas aqua plenas ferueantis immittas, ac diu cum quasi in aere trahe, & pro multo dies desecari iubebo. Tamen non pudebit & scripsisse vt in vtri diuersion transeat. Plinius in multo de generis fol. 333. Thus Pliny the author of these secrets.

Heere wee may note the diuerse and sundrie effects wrought by the seuerall degrees of fire. We see a coniunall white fire doth roast an egge till it

it become extreme hard but yet the nature of foode remaining, an intermissiue heat bringeth forth a gum altogether vnfit for nourishment, and a gentle or natural heat engendereth a chicken that is good meat, but not before it hath receiued some alteration by an outward and elementall heat. I will not vrge this philosophicall point of fire any further, only I wish that he that is a true maister of this element were my maister also for a time.

Rearmouse's art of Watching Candle

A cheape Candle or Lampe for the poorer sort to vse in their houses.

DIp Candleweeke in molten rosen, then wet your hands in water, and after you haue dipped euery weeke, you must stretch it out at length, or streighten it betweene your fingers, and so lay them to coole vpon a halfpace or floore of stone. I thinke the refuse of olde ropes and cordage would be a very profitable weeke for this purpose. This conclusion although it haue beene in some sort already published by meane persons both in towne and countrie, and giuen ouer by the inconuenience of the excessiue smoke onely which annoieth the whole room exceedingly wherein it burneth, yet mee thinkes that during the deare price of tallow candles, the poore might make some shift or other with them, as either by setting the candle within the Chimney, or else in a Candlesticke ouer the mantletree with a large wide tunnell made of wicker, and couered with paper, and hauing an elbow which might passe through some large hole into the chimney whereby the smoke may be auoided. These candles I know will not exceed halfe the price of the poorest weeke candles that are to bee bought

But for thoſe that can content themſelues with the light of a Lampe (and I am ſure the ſame will ſerue for watching Candles; and yet bee much eaſier in price) let them buy Rape Oyle, which for the moſte part is to bee had after two ſhillinges the Gallon, and therwith maintaine their Lamps, vſing a ſmall weeke of a fewe foldes onelie, or rather a Candle-ruſh in the Socket of their Lampe, and ſo they ſhall finde that one pint of oile will laſt them an hundred hours, whereas a pound of watching candles will bee ſpent in threeſcore, or threeſcore & ten houres at the moſt, and yet they are dearer by one pennie in the pound. Note that the weeke or ruſh muſt ſtande a little ſloping in the noſe of your Lampe. Or if you would vſe your Lampe in ſteade of a watching candle, and to maintaine a light onely, then may you take a prettie large beere Glaſſe, placing your weeke vpon a wier, being platted like a trefoile in the bottom, the wier it ſelfe being firſt thruſt through a litle round flat peece of Leade of the bigneſſe of a two pennie peece of ſiluer, to make it ſtande the ſteddier. The weeke muſt be faſtened to the wier with a thred of Cotten loſely bound about it. When you haue placed this weeke in the middeſt, then poure in either oile or ſuet round about it, and ſo kindle your Lampe, and it will giue ſome light alſo through the Glaſſe. Note that your Glaſſe may not be too large, leaſt that the week grow to a cole before the Oyle can conſume away faſt inough to giue it paſſage vnto freſh weeke thereby to maintaine his light the better. But if you woulde haue your Lampe to laſt the longer, but to giue no light at the ſides, nor greatly at the toppe, then ſet your Glaſſe in a deepe Baſon or potte of water, thereby to keepe the Oyle the cooler, and ſo it will

also last the longer. And it is not amisse, nay it is verie requisite to put in some water into your Glasse before you put in the Oyle, thereby to keepe the oile from burning. Neither can I heere omit or passe ouer in silence that one more speciall vse of a Lampe than anie Candle can affoorde, which is the safetie of your light from beeing caryed to and fro in the night time with Rattes and Mise, which haue oftentymes set Mattes on fire with the flame of a Candle as they haue sought to conuey it into their Nestes. Neither woulde I willingly studie by anie other Candle, because it continueth so long in one equall light, without giuing that offence to the eye which the Candle dooth by his present blaze after it is newlie topped, and by his dimnesse if it bee not often topped; If it were possible to haue store of that Oyle of Beech-maste (which a late Writer dooth vndertake to produce in great quantitie from the Nutte, and which I haue knowne expressed in England, but not with such yeelde, the difference whereof maie peraduenture bee found in the distinct natures of the English and the Naple Nut) or of that *Oleũ Palmæ*, which is taken at this daye to bee the Oile that issueth out of the Date tree, the burning whereof is most sweete and delicate in a Lampe, as I can testifie by the triall of sundrie nightes wherein I vsed no other watching Candle in my bedde Chamber. Let this suffice to haue spoken of Lampes for this time, and vntill I may obtaine more leysure and more libertie to lighten a newe Lampe that will giue more light then a Cresset in some of the darkest corners of this lande.

49 Howe to refresh the colours of olde peeces that bee wrought in oyle.

SOme vse to beate the dust off them with a Foxe taile, or with a brush of feathers, and after rubbing them ouer with a Spunge and warme Vrine. This way was commended vnto mee by master Bateman, sometime parson of Newington, a man whom for diuerse good partes that were in him, I can neuer sufficiently commend. Others rubbe them ouer lightly first with a Spunge and faire water, and after there commeth no more soile then with a spunge and good old Linseed oile, wherin somtimes for the speedier drying they do put some burnt Alom or powder of glasse finelie ground. Some do vse first to wash ouer the pictures with sope, and presently after they be drie to vernish them ouer. Note ỳ all this is intended in pictures not vernished before. *Vide postea, num. 72.*

50 An excellent cement for broken Glasses.

TAke one part of Virgin-wax, and two parts of the teares or cleare drops of Masticke, and cement therwith. But the better way is if you beat the whitest fishglew you can get with a hammer till it begin to waxe cleare, and then cut the same into verie small and short peeces, suffring the same to dissolue vpon a gentle fire in a little leaded pan with a fewe drops of *Aqua vitæ*. Then let some other that standeth by, hold both the peeces ỳ are to be cemented ouer a chafing-dish of coles till they be warme, & during their heat lay on the dissolued glew with a fine pensil, then bind the glasse with wier or packthred, & let it rest till it be

colde. With this cement I did see a Dutch Ieweller (dwelling then in the Blackfriers, but since departed this world) cement two of her Maiesties christal cups that were broke. Some cõmend vnsleakt lime, wheat flowre, and the white of an egge. Others like fishglew, with *Aquavitæ* and Ceruse, or with the teares of Masticke, *Aquavitæ*, and Ceruse. A singular workeman did highly commende vnto mee Rennish wine, and Isinglasse or fishglew for this purpose.

51 How to drie gunpowder without all danger of fire.

ALthough I do not hold this for any great secrete, yet because there hath much mischiefe & spoile of men happened onely by the retchlesse drying of powder, I haue thought it requisite and necessarie in that respect, and for the preuention of all daungers to come, to publish the same. Cause then a vessell either of Lead, Pewter, Latten, or Copper to be made, hauing a double bottome, betweene which bottomes you maie conuey scalding water at a pipe, which water may also bee heated in another roome, for the more safetie agaynst the fire, and then you may lay your powder vpon the vppermost bottome till it bee drie, and when the water beginneth to coole, you may let it out at a Cocke in the bottome of the Vessell, and so giue passage for more scalding water into the Vessell by another Cocke which may be fastened in the pipe that runneth into the vessell, Or hauing a little pipe in the side, you may from time to time with a funnell poure in scalding water at your pleasure, & this is done both with lesse cost, and also lesse circumstance. I do vse when I would dry my powder in hast, to heat a fire shouel by discretiõ, & the

I lay

I lay a paper thereon a prettie while, and if I ſee that the paper burne not nor take fire, then I doe ſpreade my powder vpon the paper, ſtirring it vp and downe till it leaue ſmoking. And this I haue alwaies found to be a verie readie and a ſafe way. Some dry their powder in a ſtoue, where no fire can come neere to endaunger it.

52. To draw Fiſh to a certaine place in the night time, by a light or candle.

PVt ſo much filed lead into an vrinall as will make it ſinke, and vpon the lead ſtrew ſome hearbes, and vpon thoſe hearbs ſome glo-worms, couer the glaſſe with a corke and late it well, and about the necke of the vrinall tie a ſtring, which muſt bee put through a great corke that may keepe the vrinall ſwimming in the water at what deapth you pleaſe. Note that with ſome pipe or quill, you muſt conuey ſome ayre into the glaſſe, for elſe the glo-wormes will die, and then I thinke their ſhining brightneſſe will vaniſh awaie, and therefore thoſe perpetuall lights are meerelie fabulous and fantaſticall that are drawne from theſe diſtilled wormes and Mercurie togither. Some nip or lute a glaſſe hauing crude Mercurie therein, and ſo hang it in the water as before. Alſo a candle helde either euen with the water, or ſunke a little way into the water, will amaze and drawe the fiſhes vnto it, ſo as if you haue a little hoope net, vpon the ende of a cane or pole, you may eaſilie take them, and bring them to the brinke ſide. All theſe experimentes are beſt performed in a darke night.

53. A Bait to catch fiſh with.

TO halfe a hotte halfe penie white loafe, take one ounce of Cocle ſeed (*Qre*, if *Coculus indiæ* be not better) one ounce of Henbane ſeed finely powdered, temper the ſame wel with ſtrong *Aqua compoſita* into a paſt, then diuide your paſt into ſmall peeces, of the bigneſſe of a graine of wheate, and caſt in a handefull of them at once, ſomwhat aboue the place where the fiſh doe haunt, if it be in a riuer. This ſerueth eſpeciallie when you ſee the fiſh to flote, but for the cheuen you muſt make your baites as big as cherrie ſtones, and put them in little coffins of paper, & then throw them vpon the water. This ſecret I haue not proued.

54. *How to driue fiſh into a Tramell.*

PItch a tramell ouerthwart a riuer where there is good ſtore of fiſhe, then goe vpwarde againſt the ſtreame a prettie waie from the net, and as you come downeward againe with the ſtreame, throw in ſome lime ſtones here and there diſperſedlie, on both the ſides of the riuer. Theſe vnſlaked limeſtones wil make ſuch a crackling in the water, that no fiſh dare return backe againe vpon them, but will run forwarde and maſh themſelues in the tramell. This *I* had of *Iohn Heſter*, one of the moſt auncient chimiſts of my time in London, in exchange of one other ſecret which I diſcloſed vnto him. Yet ſome be of opinion, that you muſt hurle in whole handfuls at once now and then, whereby the fiſh hearing ſo great a noiſe, and taſting the ſtrength thereof in the water, may bee the more affrighted.

55. *Diuers good baites to catch fiſh with.*

Fill

FIll a ſheepes gut with ſmal vnſleakt limeſtones, and tie the ſame well at both endes, that no water get therein, and if any pike deuoure it (as they are rauening fiſh and verie likelie to doe) ſhe dieth in a ſhort time, you may faſten it to a ſtring if you pleaſe, and ſo let it flote vpon the water. Alſo the liuer of euery fiſh is a good baite to catch any fiſh of the ſame kind. Paſt made of vvheate flower, a little ſaffron and ſome ſuger, and teimpered with water, is a good baite to angle withall for roche, daſe, &c. Alſo if you gather dunghill wormes, or from vnder a block, and take the earth from them, and put them into fine clean moſſe, ſuffering them to ſcowre themſelues three or foure daies therein, the fyſh will bite the better at them.

56. A readie waie to catch Pigeons, and other great birdes.

MAke ſmall coffyns of paper, (ſuch as the Confit-makers vſe to put their confites in) not exceeding the length of ones finger, paſt the ſides & endes with ſome ſtarch, clip the vpper part of them round with a paire of ſheeres, then annoint the inſide of the vppermoſt skirts of them round about with birdlime in the forme of a ring, and after you haue procured the pigeons to haunt a place, by making of a ſhrap a day or two before, lay of theſe coffyns heere & there with a few peaſon in euerie one of them a little ſloping or declining, and ſtrewe ſome other peaſon amongſt them. And when the Pigeon pecketh at the peaſe within the coffyn, ſhee is immediatlie masked or hooded, not ſeeing which waie to flie. And ſo you ſhall fynde verie good ſport, and take them eaſilie.

57. *A Worme to catch birds with.*

THere is a great opinion conceiued of a Worme that hath many feet and is found in a horse-mill, where corne is ground, most commonlie vnder the ground where the horse treadeth, and is exceeding sweet, place this worme with lime twigs about her, where she may be seen, and you shal soone take birds therewith. But I take this rather to bee the worme wherein the Nightingale dooeth so much delight, which is found in a mil-case, or where Bakers vse to boult their meale.

58. *How to catch Pigeons, Crowes, Iacke-dawes, and Magpies.*

FOr the taking of pigeons, you must make a shrap three or foure daies together, laying lose lines amongest the pease vntill the Doues bee acquainted therwith, then in som euening tie at those lines great store of strings, which with a needle before, you must thrust through the pease, being first sodden softe for the purpose, and at the end of euery string tie a little knot, when a pigeon hath swallowed downe one of these pease, together with the string, she cannot possiblie get it vp againe, but she is easilie taken. Perhaps some other birdes may also be taken in this manner. It is not amisse to hide the threeds neare the pease with grasse, earth or straw, or some such like matter. Also if you throw gobbets of flesh or cheese curds abroad in the fieldes where there be store of Rookes, Crowes, Dawes, or Magpies, within the which there is conueied some of the powder of *Arsenicke* or

subli-

ſublimate, you ſhall ſoone diſpatch your barnes and other Garners of corn, of al theſe waſtfull birds. But take heed that none of your hogges doo eat of theſe dead birds, leaſt they happen to poiſon them alſo.

59. How to kil Seapies, Seagulls, & other rauening waterfowle.

SOme be of opinion that if in the winter time, you doe ſtreine ouerthwart a riuer or brooke, where fowle doe haunt, ſome ſtrong line or whipcorde, at the which you may alſo hang diuers other ſmaller threads, baited with garbage vpon hookes, of an apt ſize for them, that ſo they will hang themſelues, and be eaſily taken. Alſo for the taking of ſtore of ſeapies, you may lime ſome twigs which may be faſtened at ſmall fiſhes, and then laie the ſame vpon large leaues, ſo as the lime touch not the water, and the ſeapie ſtriking at the fiſh is taken with the lime twigs. And hauing taken one or twoe of them, then clippe their winges and ſo leaue them in the water, and all the ſeapies thereabout that are within hearing, wil come to helpe them, and continuallie flie houering ouer them, ſo as hauing your peeces charged you may diſcharge at the whole flocke as faſt as you can charge, for they wil not be driuen awaie.

60. How to gather great ſtore of Waſpes together, ſo as you may deſtroy them all.

SOme honie put into a pipkin, and the ſame placed ouer a gentle fire, the windowes of the roome being ſet open, will by the ſent and vapour thereof, draw all the Waſpes that are neere the place within

any reasonable compasse, into the roome where you haue bestowed the pot. Note that this must be done in an apt season of the yeare, when as there be store of waspes, and in some place where they haunt great lie. Also the waspes will soone resort to an earthen pot, wherein there is some raw flesh, and when you haue drawne some store of them together into the pot, then couer it and set it on the fire vntill you haue destroyed them all. This latter secret I haue out of *Cardanus de rerum varietate, pag. 294.* but the first is more naturall and commaundeth farther off. Also if you set store of the glasses in your Orchard, and about your house, where you see the greatest haunt of them, with some decoction of honie and water, or water and suger, or any other sweet wine or composition in them, leauing these pottes or glasses three parts emptie, they will not forsake these sweete liquors, vntill they haue drowned themselues therein.

61. How to keepe garments of cloth, or hangings of Tapistrie, Dornicke, Saie, &c. from moath-eating.

BRush your apparell with an ordinarie brush, and so likwise your hangings, or else you may vse a brush made of a figge frale, vntill you haue gotten all the dust out of them, then brush them ouer throughlie wel twice or thrice euerie yeare as they hang, with a brush made of wormwood tops. And yet I thinke it to be the surer waie, if they were also wel rubbed with wormewood on the backsides. I haue heard that it is an vsuall practise amongst the Italians here in England in summer time to cause great store of Walnut tree leaues to be hoong vpon a thread, so as one may

not

not touch another, and when they are throughlie drie, then ſtrewe them in their Cheſtes and Preſſes, amongſt their cloathes and other furniture of their chambers and beds, and within the ſeuerall foldes of euery garment.

62. To helpe beere that beginneth to ſoure or is dead.

SOme put a handfull or two of ground malt into a barrell of beere, and ſtir the ſame and the beere wel together, and ſo make it to worke afreſh and become good againe/Some do burie ſower beere 24. houres in the earth, and thereby recouer it. Others adde new ſtrong beere to the old, and ſo the dead beere is forced ſometimes to worke againe to a new head/Some fetch it againe with chalke or lime, and ſome with oyſter-ſhels, and ſome throw a handfull of ſalt into a barrell of dead beere. A Ladie in this lande hath alwaies vſed to put in a handful of ote-meale into euery barrell of beere, when it was firſt laide into her ſeller, whereby hir drink did alwaies carrie with it a quicke and a liuely taſt: It is alſo very good to tilt your beere, when the veſſel is little more then halfe drawn off, for ſo you ſhall draw your beere good euen to the latter end./

63. To helpe a chimney that is on fire, preſentlie.

WHen you ſee the chimny on fire, forthwith get a large thick blanket or couerlet, and with ỹ help of twoe or three perſons, let the ſame bee held cloſe both aboue and below vnto the mouth of the chimney, ſo as no ayre may enter, and if you canne come eaſilie to the toppe of the Chimney, couer the ſame cloſe alſo, either with a fitte boorde, or elſe

with wet woollen cloaths, & so the fire wanting aire will presently go out and be smothered.

64. To haue store of Seafish for the prouision of ones table, without repairing to the sea for them.

Carews Survey of Cornwall

SYr *Edward Hobbie* (as I haue heard) hath stored certeine dikes in the Ile of Sheppey, with sundrie kindes of Sea-fish, into which dikes by sluces, he doth let in from time to time, change of sea-water to nourish them.

65. To make ale or beere to become stale, in a short time.

BOttle ale, or bottle beere, being buried somewhat deepe in the ground, in a coole or shadie place, becommeth stale enough to bee drunke in 48. houres space, as I haue beene assured by an honest and sober Countrier.

66. How to steale Bees.

IF you place a Bee-hiue somwhat before swarming time in the midest of a great beech tree, so close as that it may not be discerned for feare of stealing, the Bees will resort vnto the same, especiallie if it bee first wel sprinkled within with water and honie.

67. How to make a tallowe candle to last much longer, then it doth in our vsuall manner.

ANeopolitane hath written, that salt mingled with oile will make it to double his lasting, but I thinke the practiser hereof will find it somwhat troblesome to make a good solucion of salt in oile. For oile is an improper subiect to receiue salt. I haue heard an Irish practici-

practitioner affirme, that if tallow candles be made about Allhallontide of good stuffe, and presently laide in colde water by the space of 24. houres together, and then hung vp to drie in a coole and windie place vpon their stickes, that by this meanes onely they will last much longer than otherwise they would, and burne also much sweeter. But I am sure that if there be a true counterpeize giuen to a short tallow candle, (such as is vsually called the Goldsmiths candle) and the same afterwards let down betweene ones fingers into the midst of a pale or tub of water, so carefully, as that the flame be not extinguished in letting the same fall into the water, it will last as long as two candles of the same length and bignesse, alwayes supporting it selfe aboue the water, by a thin cruft or webbe, which it worketh about the flame in the nature of Camphire, which continueth his burning in the water (being once set on fire) vntill it haue wrought a passage or entrie for the water into it selfe.

68 How to tell the iust number of Apples, Nuts, Shillings, &c. as they lie in bulke together, how great so euer the heape be.

CAuse the owner of them to dispose of the whole heape in this maner. First will him to lay downe two, then let him double that number likewise, and so continue in the rule of duplation vntill hee can double no longer, laying all the odde ones apart by themselues, then shall you easily ghesse by the present view of the whole number, how many there are in the whole heape. For either they must be 2. 4. 8. 16 32. 64. 128. &c. and which of these numbers soeuer it bee, euery reasonable eye will ghesse, the bulk of the one number doth so much surmount the o-

then. The like also may be done in trebling, and now and then doubling or trebling, the more to obscure the conceipt.

69 How to preuent drunkennesse.

DRinke first a good large draught of Sallet Oyle, for that will floate vpon the Wine which you shall drinke, and suppresse the spirites from ascending into the braine. Also what quantitie soeuer of newe milke you drinke first, you may well drinke thrise as much wine after, without daunger of being drunke. But howe sicke you shall bee with this preuention, I will not heere determine, neither woulde I haue set downe this experiment, but onely for the helpe of such modest drinkers as sometimes in companie are drawne, or rather forced to pledge in full bolles such quaffing cõpanions as they would be loth to offend, and will require reason at their hands as they terme it.

70 An excellent tent for a Diamond.

BVrne Iuorie in a crusible or melting potte, being close luted, into a blacke powder, then take a little of the fine powder thereof, and mingle it with a few drops of the extracted Oyle of Masticke, and in the setting of the stone you must haue care that it touch nor the tent.

71 How to make Oile or Vernish to drie speedily.

THis is done first by boyling of the oile to the consumption of the one halfe, or one third thereof, and then by the putting in the ashes of the backbones of Shads or Mackerell. Also diuerse Shaddes

heades dried in the winde, and hung vp in a darke place, will glister like Glow-wormes.

72 A strong Lee that will fetch out any steyne as also refresh an olde Oyle Picture, and make it verie faire againe.

TAke of the ashes of the Vine one handfull, of white coppres and burnt allom of each the quantitie of halfe a Walnut, put thereto a pint of conduit water, infuse the same vpon the said substances in an Ipocras bagge, & reiterate the water vpon them 4. or 5. times till it grow verie strong, set the said water on the fire, and put thereto the quantitie of an hasill nut of good Sope, then take the saide Lee so hote as you may well endure your hande therein, and after you haue taken off the dust from the picture with some bush or fore tayle rub ouer the picture with a Spunge till it come to a good lustre with the said Lee, and when the colours please you, then with faire water wash off the said Lee againe, and the peece or picture though neuer so olde will become verie fresh. *Qu.* if this secrete do not onely extend to such oile peeces as are not vernished. Some rub ouer pictures of Tables with an Onion cut through the midst. This secrete with the preceedent I had of a Dutch mountbanke, and they came so hardly from him as if hee had beene extreemly costiffe. *Vide antea num. 49.*

73 To helpe Wine that reboileth.

IF anie sweete Wines happen to reboile in the hot part of the Summer, as I haue often seene, and as manie Vinteners to their great losse haue often-

times felt) then Placentius willeth a little peece or cantle of Cheese to be put into the vessell, and presently a strange effect will follow. *Hoc ex anchora famis & sitis.* I beleeue that the corporation of Vintners would giue twentie pound yeately to haue this secrete warranted to bee true. For the best remedy which they haue, is to draw the wine of from the lee into other cleane caske, thereby perswading themselues to coole the wine, and to stay the boyling thereof. But after a while the inward fire oftentimes beginneth a fresh workmanship, and frustrateth all their labour. I would esteeme him for a learned Vintner, and worthie to haue the next auoydance of Bacchus his chaire, that could giue me the true reason of this reboiling of wines. But because I haue allotted so great a place of honour to him that can but shewe the reason onely thereof, therefore I will not presume nor professe to knowe the cause efficient, but I durst vndertake to performe the remedie, if I thought my reward would not bee somewhat like vnto his, that within this few yeares taught diuerse of the companie how to draw out of a Hogges-head of wine lees, 10 gallons of cleare wine at the least, which beeing trickt, or compassed, or at the least mingled with other wine, hath euer since by diuerse Vintners beene retailed for wine, whereas before it was wholie solde for lees to the *Aqua vitæ* men. And this is the reason why there hath neuer since been the like store of lees to make *Aqua vitæ* of, as before the discouerie of this conceit, and that the lees of many Cellors which before were liquid, are now become stiffe like paste, and may verie well be wrought vp into the forme of bals. And if I be not deceiued, the first practize thereof began in Pater noster row, and within these few yeares,

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but I feare by this time, it is a parcell of manie mens Creede that will neuer be left til the worlds end. Wel, the poore fellow got hardly a good sute of apparell amongst diuerse of them to whom hee disclosed the secrete, although some one of them could tell which way presently to raise 30 or 40 li. *per annũ* vnto themselues. And therefore I see it is no offring of skill in these dayes to Vintners. But the better course were to take a Tauerne and get a Hollibush if France were more open, and a litle more freed of the excessiue impost, and so to draw wines as artificially as the best of them. For I can assure you I haue almost the whole arte as it is this day in vse amongest the Vintners, written in a prettie volume entituled, *Secreta dei pampinei*. And if I durst here so boldly as I could, both truly & largely write of those iumbling sleights, that are too too often practised in our naturall wines by some of the Coopers of London, to the great benefite of the Marchant and Vintner, although themselues, poore soules, get nothing thereby but the hooping of the vessels, and now and then a Can of wine for their labours, a man would wonder from whence such great varietie of iugling should growe or spring, and howe these plaine fellowes that neuer read their Grammer, nay scarcely know their A, B, C, should be able to run through Ouids Metamorphosis as they doe at midnight. And yet I cannot altogither blame either the Cooper, or the Vintners man for practising of these alterations, transmutations, and sometimes euen real transubstantiations, of white wine into Claret, & old lags of Sacks or Malmesies, with malasoes into Muskadels. For we are growne so nice in taste, that almost no wines vnlesse they be more pleasant than they can bee of the Grape will content vs, nay no colour vn-

lesse it bee perfect, fine and bright, will satisfie your wanton eyes, whereupon (as I haue beene credibly enformed by some that haue seene the practize in Spaine) they are forced euen there to entertaine now and then a lay of Lime with the Sacke grape in the expression thereby to bring their Sackes to bee of a more white colour into England then is naturall vnto them, or then the Spaniardes themselues will brooke or endure, who will drinke no other Sackes them such as be of an Amber colour. This makes the Vintners to tricke or compasse all their naturall wines if they bee a little hard, with Bastarde to make them sweeter, if they pricke a little they haue a decoction of honie with a few Cloues to deceiue the taste, if they be clowdie or not perfect fine, they giue them either the white or the yellow parrell, according to the naturall colour of the Wines, wherein they must vse Egges, Milke, Bayesalt, & Conduit water well beaten and laboured together with a stubbed rodde, and then wrought soundlie together with a parrelling staffe, which parrell for the most part in one night (vnlesse the Wines happen to haue a flickering Lee) will cause them to fine, whereby you may presently drawe at certaine. But this is daungerous vnlesse it bee in a house well customed, for that the Wine may not lie too long vpon his parell. And some Wines will not endure long after you haue racked them from their parell. Note the wholesomnesse of these Lees to make *Aqua vitæ* withall. But when the Wines doe rope or beginne to faile or faint in themselues, either in substaunce or in colour, either by age, by the fault of Caske, foyle, salt water, or other accident, then manie tymes the Vintener is driuen to his hard shiftes, and then

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hee helpeth himselfe with Allome, with Turnsole, Starch, and with manie other Drugges, and aromaticall ware which hee fetcheth from the Apothecarie, the particulars whereof I coulde set downe and applie euen as they haue beene a long time (till within these fewe yeeres) practized in one of the most auncientique Tauernes of my time. But my purpose is onely to put some in minde of their grosse night-woorkes which discouer themselues by Candlelight at their Celler Windowes, whishing them to leaue all vnwholesome practizes for mans bodie, least if they shoulde hereafter against my will force mee to publish them to the worlde, I shoulde drawe my Countrey men into such a liking of our Royston Grape, that in the ende they woulde for the most part content themselues with their English and naturall drinke, without raunging so farre for forreine Wines.

74 The making of a Bragget, which is manie times mistaken for a Muskadell by the simple sort of people.

PVt one part of smal Alewoort that is blood warm with one part of clarified Honie according to the maner set downe num. 75. but put no Cloues therein in the clarifying. For the making of one Hogshead of this Bragget which is aboute 63. Gallons, you must take nine Gallons of this clarified Honie, and 54 gallons of strong new ale: when your clarified hony hath stood one day, then mingle the same with your newe Ale in a Hogshead, first filling your Hogshead halfe full before you put in your honie, and then hang this aromaticall copposition following

in a long slender bagin the midst of the vessell vz. of Cinamon three ounces, ginger three ounces, grains 3. ounces, colianders one ounce, cloues one ounce, nutmegs one ounce, long pepper halfe an ounce, *Cardamomum* one ounce and a halfe, liquerice one ounce, then fil vp the vessell almost full with the rest of the new ale (yet some commend rather the putting in of the spices confusedlie then in a bag) bee sure to haue foure or fiue gallons or more of the same newe ale, to fill vp the hogshead as it purgeth ouer continuallie. There is a lesser hole neere the bung hole in beere hogsheads, which must stande open whilest it purgeth, you must also be carefull in the beginning to giue some little vent to the hogshead whilst it worketh: in three or foure moneths, it will bee readie to drinke. You must haue a hazell sticke of the bignesse of a good cudgell, so great as may well enter in at the round bung-hole, and when your hogshead is about three quarters full, put in this stick, being sawed crosswise at the end about one cubite in length, (the Vintners call it their parrelling staffe) as the aptest toole for this purpose. Beat with the said staffe the new ale and the honie togither a good prettie while, & when you haue finished this agitation, fil vp the vessel with the rest, and let it purge as before. If you finde your muscadell too thicke, after it hath stood 3. or 4. monethes, you may take a cane or pipe, made of Tinne plates, that will reach into the midst of the hogshead or somewhat more, stop the ende thereof and make some holes in the sides, and with a funnell you may poure more newe ale into the Cane, and so make it thinner. This Cane is an apt instrument to conueie any liquor or composition into a vessell of wine without troubling of the same, or turning vppe the lees,

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whereby you may draw the same fine presently.

75 Howe to clarifie honie so that the taste thereof shall be much altered.

PVt a gallon of water blood-warme to a gallon of honie, put in your honie first, and with a sticke take the depth thereof in the vessell wherein you boile it, and then put halfe an ounce of beaten cloues bound in a linnen cloth therein, and let them boile with the water and honie on a gentle fire till all the water bee consumed, which you shall ghesse at by the marke on the sticke. Your honey must be pure and simple not mingled with woort, flowre, or other bad composition, euen as it is gathered vpon the breaking vp of the hiues. It is a worke of two or three hours, and the elder the honie is the better it serueth for this purpose. You must remember to take away the skum as it riseth. Som boile this honie a little higher to a more consistencie, and preserue fruit therewith in stead of sugar. These two receits I had of an Oxeford scholler, who assured me that hee had often made proofe therof in the Citie of Oxford, and I know the man to be both of good conceipt, and verie carefull in the commendation of any secrete to his friend otherwise then may well stand with his owne credite.

76 A Receipt for the making of an artificiall Malmesey.

TAke four gallons of conduit water, into the which put one gallon of good English honie, stirre the honie well till it be dissolued in the water, set this water in a copper pan vpon a gentle fire, & as there ariseth

times felt) then Placentius willeth a little peece or cantle of Cheese to be put into the vessell, and presently a strange effect will follow. *Hoc ex anchora famis & sitis.* I beleeue that the corporation of Vintners would giue twentie pound yearely to haue this secrete warranted to bee true. For the best remedy which they haue, is to draw the wine of from the lee into other cleane caske, thereby perswading themselues to coole the wine, and to stay the boyling thereof. But after a while the inward fire oftentimes beginneth a fresh workmanship, and frustrateth all their labour, I would esteeme him for a learned Vintner, and worthie to haue the next auoydance of Bacchus his chaire, that could giue me the true reason of this reboiling of wines. But because I haue allotted so great a place of honour to him that can but shewe the reason onely thereof, therefore I will not presume nor professe to knowe the cause efficient, but I durst vndertake to perfourme the remedie, if I thought my rewarde would not bee somewhat like vnto his, that within this few yeares taught diuerse of the companie how to draw out of a Hogges-head of wine lees, 10 gallons of cleare wine at the least, which beeing trickt, or compassed, or at the least mingled with other wine, hath euer since by diuerse Vintners beene retailed for wine, whereas before it was wholie solde for lees to the *Aqua vitæ* men. And this is the reason why there hath neuer since been the like store of lees to make *Aqua vitæ* of, as before the discouerie of this conceit, and that the lees of many Cellors which before were liquid, are now become stiffe like paste, and may verie well be wrought vp into the forme of bals. And if I be not deceiued, the first practize thereof began in Pater noster row, and within these few yeares,

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leſſe it bee perfect, fine and bright, will ſatisfie your wanton eyes, whereupon (as I haue beene credibly enformed by ſome that haue ſeene the practize in Spaine) they are forced euen there to enterlace now and then a lay of Lime with the Sacke grape in the expreſſion thereby to bring their Sackes to bee of a more white colour into England then is naturall vnto them, or then the Spaniardes themſelues will brooke or endure, who will drinke no other Sackes them ſuch as be of an Amber colour. This makes the Vintners to tricke or compaſſe all their naturall wines if they bee a little hard, with Baſtarde to make them ſweeter, if they pricke a little they haue a decoction of honie with a few Cloues to deceiue the taſte, if they be clowdie or not perfect fine, they giue them either the white or the yellow parrell, according to the naturall colour of the Wines, wherein they muſt vſe Egges, Milke, Bayſalt, & Conduit water well beaten and laboured together with a ſtubbed rodde, and then wrought ſoundlie together with a parrelling ſtaffe, which parrell for the moſt part in one night (vnleſſe the Wines happen to haue a flickering Lee,) will cauſe them to fine, whereby you may preſently drawe at certaine. But this is daungerous vnleſſe it bee in a houſe well cuſtomed, for that the Wine may not lie too long vpon his parell. And ſome Wines will not endure long after you haue racked them from their parell. Note the wholeſomneſſe of theſe Lees to make *Aqua vitæ* withall. But when the Wines doe rope or beginne to faile or faint in themſelues, either in ſubſtaunce or in colour, either by age, by the fault of Caske, ſoyle, ſalt water, or other accident, then manie tymes the Vintener is driuen to his hard ſhiftes, and then

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74 The making of a Bragget, which is manie times mistaken for a Muskadell by the simple sort of people.

PVt one part of smal Alewoort that is blood warm with one part of clarified Honie according to the maner set downe num. 75. but put no Cloues therein in the clarifying. For the making of one Hogshead of this Bragget which is aboute 63. Gallons, you must take nine Gallons of this clarified Honie, and 54. gallons of strong new ale: when your clarified hony hath stood one day, then mingle the same with your newe Ale in a Hogshead, first filling your Hogshead halfe full before you put in your honie, and then hang this aromaticall cõposition following

in a long slender bag in the midst of the vessell vz. of Cinamon three ounces, ginger three ounces, grains 3. ounces, colianders one ounce, cloues one ounce, nutmegs one ounce, long pepper halfe an ounce, *Cardamomum* one ounce and a halfe, liquerice one ounce, then fil vp the vessell almost full with the rest of the new ale (yet some commend rather the putting in of the spices confusedlie then in a bag) bee sure to haue foure or fiue gallons or more of the same newe ale, to fill vp the hogshead as it purgeth ouer continuallie. There is a lesser hole neere the bung hole in beere hogsheads, which must stande open whilest it purgeth, you must also be carefull in the beginning to giue some little vent to the hogshead whilst it worketh: in three or foure moneths, it will bee readie to drinke. You must haue a hazell sticke of the bignesse of a good cudgell, so great as may well enter in at the round bung-hole, and when your hogshead is about three quarters full, put in this stick, being sawed crosswise at the end about one cubite in length, (the Vintners call it their parrelling staffe) as the aptest toole for this purpose. Beat with the said staffe the new ale and the honie togither a good prettie while, & when you haue finished this agitation, fill vp the vessel with the rest, and let it purge as before. If you finde your muscadell too thicke, after it hath stood 3. or 4. monethes, you may take a cane or pipe, made of Tinne plates, that will reach into the midst of the hogshead or somewhat more, stop the ende thereof and make some holes in the sides, and with a funnell you may poure more newe ale into the Cane, and so make it thinner. This Cane is an apt instrument to conueie any liquor or composition into a vessell of wine without troubling of the same, or turning vppe the lees,

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75 Howe to clarifie honie so that the taste thereof shall be much altered.

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76 A Receipt for the making of an artificiall Malmesey.

TAke four gallons of conduit water, into the which put one gallon of good English honie, stirre the honie well till it be dissolued in the water, set this water in a copper pan vpon a gentle fire, & as there ari-

seth any skumme take it off with a goose wing or a Skimmer, and when it hath simpered about an hour, then put in a new laide egge into the water, which will sinke presentlie, then continue your first fire without any great encrease, and also your skimming so long as any skim doth arise, and when this egge beginneth to floate aloft and sinketh no more, then put in another new laide egge, which will sinke likewise, & when that second egge doth also swim aloft with the fyrst egge, let the water continue on the fyre a *Pater noster* while, then take it off, and beeing colde, put the same into some roundelet, fylling the roundelet brim ful. And in the middest of this roundelet hang a bagge, wherein first put some reasonable weight or peize, and to euerie eight gallons of liquor two nutmegges grosélie beaten, twentie Cloues, a rase or two of Ginger, and a sticke of Cynamon of a fynger length. Set your roundelet in the sunne, in some hot Leades or other place, where the sunne shineth continuallie for three whole monethes, couering the bung-hole from the raine, and now and then fylling it vppe with more of the same composition as it wasteth. This I learned of an English trauayler, who aduised me to make the same alwaies about the middest of Maie, that it might haue 3. hot moneths togither to work it to his ful perfection. But least this way should happen to faile you, I haue thought good for thy better security, to set down mine owne fansie, for the easier stirring vppe of this Malmesey to his workmanship. Let your vessel bee such as hath alreadie conteined some muste or other liquor that hath wrought therin (for he that knoweth not the vse of a worker is but a slender Artist) stop the same very close and lay it in a conuenient Seller til it haue wrought

ſufficientlie, but in the working giue the caske vent by degrees, for feare of after claps. Or elſe you may eaſilie procure the ſame to worke, by adding of ſome yeaſt or ferment vnto it, and ſetting it warme, according to the vſuall manner of ale and beere.

77. How to keepe Claret wine, or any other wine good, many yeares together.

AT euerie vintage you muſt drawe off almoſt a fourth part out of the hogſhead, and then rowle it vpon his Lee, and after fyll it vp with the beſt newe wine of the ſame kind, that you can get. Your caske muſt be bound with iron bandes or hoopes, and alwaies kept full and tight. I haue heard that an Eſſex knight vſeth this practiſe, and hath Wine of nine or ten leaues (as they terme it) which is ſo many yeares olde.

78. To keepe Wall-nuts greene and moiſt a long time, ſo as you may pill the kernell.

TAke the ſtampings of Crabs after the veriuice is expreſſed from them, lay your nuts therein one by one, ſo as they touch not one another, and ſo make *ſtratum ſuper ſtratum* till your veſſell be ful; theſe will laſt ſome two or three monthes as I haue beene credibly enformed by a gentlewoman that hath made proofe thereof.

79. How to keepe the gloſſe of Spaniſh Leather ſhoaes, or buskins, along time.

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THe blacking of a Lampe tempered with the oyle of Almondes or some other sweete oile, is verie good for this purpose. I know a gentleman that doth vse to rub his spanish leather shooes with the backe-side of a peece of freese-leather, but you must haue care to keepe this kinde of leather verie drie. Some maintaine the glosse of this leather, with a peece of black veluet onely.

80. How to helpe smoking Chimnies.

IF the Chimnies be large, and carrie some good length and breadth with them, then may you erect or builde a false back & sides to your smoking chimnies, so as there may be a distance of three or four inches betweene the olde backe and the new, raise this new worke a foot aboue the mantletree. Warranted by a Gentleman of Ireland, being a great practiser in artificiall conclusions, &c.

81. Tinder and match of a new kind and sweet.

TAke the light & thin shauings of drie fir boords, light them with a candle, and when they are almost burnt, put them out as you would doe Linnen rags, after the flame is past, in a stone pot. Then laie another thin shauing thereon, and with a steele and flint stone strike fire into this tinder, and blow therein till this new shauing doo kindle and so light your candle, and then put out this last shauing in some reasonable time, and it will helpe to increase your Tinder. This I haue seene a Dutch Ioiner vse oftentimes in the lighting of his Candle. Note here that your match

match and your tinder is all of one ſubſtance or matter. Alſo you may make ſweete matches to your ordinarie tinder in this maner. Cut or thwite a number of ſmall Iuniper ſtickes, with ſharpe points like picke toothes, and dip them but a little waie, and that very lightly in Brimſtone, and when the brimſtone is ſpent the Iuniper will burne ſweetlie.

82. An excellent mixture, to make pewter bright withall and to take out the ſtaines.

TO a gallon of ſtrong bucke Lee, put halfe a pound of blacke ſope, and a reaſonable handefull of the duſt of Flaunders tile, which you ſhall make by rubbing one againſt another. Boile them well together til they become like pappe or birdlime. This will laſt a whole yeare. You muſt onely haue care to beſtowe good labour vpon the veſſel if you meane to vſe this ſcowring.

83. To defend a Horſe from flies in his trauaile.

STeepe *Arſmarte* in water, making the water verie ſtrong of the hearbe, and therewith waſh your horſe before you meane to trauell.

84. To kill Rats in a Garner.

BE ſure there be no holes in the bottome or ſides of your garner, or any where elſe, ſauing aboue the boords which you muſt place ſheluing wiſe, or in the maner of a penthouſe throughout the garner, about halfe a yard or two foote from the corne, ſo as when the Rats haue leaped downe into the bulke of corne,

they ſhall not be able to riſe or bolt vp againe before you haue ſped them.

85. How to take away the offence of noiſome vaults.

MAke the vent thereof vpwarde as large or larger then the tunnell downward, and carrie the ſame vp to a conuenient heigth, for ſo the offenſiue ayre as faſt as it riſeth hath iſſue and ſtayeth not in the paſſage

86. Sweet and delicate dentifrices or rubbers for the teeth.

DIſſolue in foure ounces of warme water, three or foure drams of gumme Dragagant, and in one night this wil become a thicke ſubſtance like gellie, mingle the ſame with the powder of Alablaſter finely ground and ſearſed, then make vp this ſubſtance into little round rowles of 4. or 5. inches in length. Alſo if you temper roſet or ſome other colour that is not hurtfull with them, they will ſhew full of pleaſing veines. Theſe you may ſweeten either with roſewater, ciuet, or muske. But if your teeth be verie ſcalie, let ſom expert Barber firſt take off the ſcales with his inſtrument, and then you may keepe them cleane with the aforeſaid rowles. And heer by thoſe miſerable examples that I haue ſeene in ſome of my neareſt friendes, I am enforced to admoniſh all men to bee carefull, how they ſuffer their teeth to be made white with any *Aqua fortis*, which is the Barbars vſuall water, for vnleſſe the ſame be both well delaied, and carefullie applied, a man within a few dreſſings, may be driuen to borrow a ranke of teeth to eate his din-

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ner with, vnleſſe his gums doe helpe him the better.

87. To helpe either man or horſe that is tender in the foote or hoofe, whereby they cannot endure any great trauell.

LEt him that trauelleth much and hath this infirmitie, put in each ſock before he draw on his hoſe a new laid egge ſomewhat groſelie broken, and ſo let him trauell vpon them. So likewiſe you muſt put in two egs a little beaten into either hoofe of the horſe, and clap cow dung vpon them, and then wrap them well one night that they fal not out, and after you may trauel him any reaſonable iourny. This is much vſed in Italie.

88. How to keepe Oyſters good 10. or 12. daies.

SOme hold opinion that if you barrel them vp whileſt they are new and quick at the Sea ſide, putting ſome of the brackiſh water where they are taken amongſt them, that ſo they wil laſt manie daies good. *Qre.* Of diſſoluing of ſome ſalt in freſh water til it bee of one ſtrength with the brackiſh, which conteineth ſome eighteenth or twentith part of ſalt, peraduenture it wil not be amiſſe to change your brine now & then. Some pile them vp in ſmal roundelets with the hollow parts of the ſhels vpward, caſting ſalt among them at euerie laie which they make. This is a good deuiſe to ſend them fat into the Countrey, where oyſters are deintie and ſold by tale.

89. To keepe Lobſters, crayfiſhes, Prawnes, Shrimpes, &c. ſweet and good for ſome few daies.

THese kind of fysh are well noted to bee of no durabilitie or lasting in warme weather, yet to prolong their dales a little (though I feare I shall raise the price of them by this discouerie amongest the Fishmongers, who onely in respect of their speedy decay doo now and then affoord a penieworth in them) if you wrap them in sweet and course rags first moistened in salt water, and then burie these cloaths in Callis sande, that is also kept in some coole and moist place, I knowe by mine owne experience, that you shall finde your Labour well bestowed, and the rather if you lay them in seuerall cloathes so as one doe not touch the other.

90. An artificial composition, wherwith to make smooth glistering and hard floores, or to plaister wals with.

TEmper Oxe-bloud and fine clay together, and lay the same in any floore or wall, and it will become a verie strong and binding substance, as I haue beene told by a gentleman stranger, who affirmed vnto me that the same is in great vse in Italie.

91. To make parchment cleere and transparent, to serue for diuers purposes.

MAke choice of the finest and thinnest parchment you can get, scrape the same ouer with a knife till it become verie thin, (but first you must wet it wel in water) then straine it vpon a frame, and fasten it well, and when it is drie oile it all ouer with a pensill, with the oile of sweet Almonds, oile of turpentine, or oile of spike, some content themselues with linseed oile, & when it is thorow dry, it will shew very cleere, & serue

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in windowes in ſteade of Glaſſe, eſpecially in ſuch roomes as are ſubiect to ouerſeers. You may draw anie perſonage, beaſt, tree, flower, or coate armour vpon the parchment before it bee oyled, and then cutting your Parchment into ſquare panes, and making ſlight frames for them, they will make a prettie ſhew in your windowes, and keepe the roome verie warm. This I commend before oyled Paper, becauſe it is more laſting, and will endure the bluſtring and ſtormie weather much better then paper.

92 A profitable and cheape morter for building, wherein either no Lime, or ſmall ſtore of Lime ſhall bee requiſite.

A Wiſe, wealthie, and ancient Sopeboyler, dwelling without Algate, hath for the better encouragement of others, long ſince erected a faire and ſtately edefice of brick for his owne habitation, vpon the good ſucceſſe whereof he hath alſo verie latelie built one other houſe of ſome charge and good receipt, the morter whereof did conſiſt of two loades of waſte ſope aſhes, one load of lime, one load of loame, and one load of Woolwich ſand. So likewiſe one other of the ſame faculti e, being likewiſe of good credite and great experience, hath vſed onelie loame and ſope-aſhes tempered and wrought together in ſtead of morter, whereby he hath laid both the foundations, chimneys, and their tunnels in his dwelling houſe in Southwarke, and they haue endured thoſe ſtormes alreadie which haue ouerturned manie other both new and olde tunnels that hath beene built with the ordinarie morter. It may be that many lime-men, and ſome of thoſe Bricklayers that are in fee

with them may bende their force againſt this newe practize, and labour to diſcredite the ſame by all meanes poſſible, but there is no reaſon that can holde againſt experience, nor no malice ſo great, but that trueth in her time ſhall bee able to vanquiſh. And if theſe three tryals ſhall not bee thought a competent number to giue credite to a new inuention, I will vppon reaſonable requeſt and warning, backe and confirme them, with threeſcore more at the leaſt, which I can produce alreadie made and executed within the Citie of London and the Suburbs thereof, inſomuch that who ſoeuer will take a carefull view of all our late buildinges that conſiſt of Brickwoorke (eſpecially within the Suburbs of the Citie) hee ſhall finde great ſtore of theſe waſte aſhes to be imployed in them.

93 A conceipted drinking Glaſſe wherein many ſortes of fiſh will ſeeme to ſwim vp and downe.

IN the middeſt of a good large drinking-glaſſe, and of a bole faſhion, let a ſhort piller of Glaſſe ariſe, vpon the which a rounde Globe or Ball of Glaſſe muſt be placed, vpon which Ball there muſt bee diuerſe ſortes of ſmall fiſhes well drawne and limned, then fill the Glaſſe either with water, or with white, or Renniſh Wine, and the leaſt motion that can happen, either to the Wine or water, will make the fiſhes ſeeme to play vp and downe within the Glaſſe.

94 Howe to diſſolue golde, or to part it from guilt ſilner, without melting downe the ſilner.

Diſſolue

DIſſolue ſome *Sal Armoniacke*, in ſome good *Aqua fortis*, whoſe fæces (fixes the Goldſmiths vnproperly tearme them) haue beene firſt ſtriken down with ſome fine ſiluer, or elſe ſtill by retort the ſaide *Aqua fortis*, from good ſtore of Bayſalt firſt calcined, ſet ſome of this water in a parting glaſſe vpon warme imbers, and put therein your guilt ſiluer, and it will ſtand in the forme of a golden water. You may gather your golde againe either by euaporation of the water, and ſo the golde will ſettle in the bottome, or elſe if you put Mercurie therein it will amalgame with it, which Mercurie will ſoone flie away in fume, being put into a Cruſible, and leaue the Golde behinde. I doe hold this to bee a verie profitable ſecrete for the Goldſmith, vnleſſe the Mercurie in the firſt guilding of the ſiluer doe conuey ſome part of the Golde ſo farre within the ſiluer, as that the water can make no ſufficient penetration vnto it. For by this meanes all the charge of teſting and parting wil be ſaued, which (as I take it) will not bee much leſſe then foure pence vpon euerie ounce. But whereas it hath beene obiected by ſome Refiners, that by this meanes there will be much golde loſt (eſpecially in ſuch auncient plate as hath beene made and perhaps melted down againe before the arte of refining which is of a *puiſne date* was found out, for that this water doth only take holde of ſuch gold as doth enuiron the outſide of the ſiluer) I holde this to be a weake obiection to diſcourage any man from the practize of this ſolution, for that in ſuch plate as either carieth no touch, or ſo old a touch as the buler ſhall not bee acquainted withall, he may follow the old refining rules: and in ſuch guilt plate as hath beene made ſince the arte of refining

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hath firſt beene vſed amongſt vs (which is the moſt vſuall plate that is bought and ſold in theſe dayes (he ſhall finde the ſame a moſt beneficiall practize, if the firſt doubt may be ſalued. Which may eaſily be proued in one ounce or two of guilt ſiluer, making a ſtraite obſeruation howe much golde was beſtowed thereon.

95. Howe to knowe when the Moone is at the full by a glaſſe of ſalt water.

IT hath beene creedible reported vnto me, that if an ordinarie drinking glaſſe bee filled brim full, a little before the full of the Moone, that, euen at that inſtant when the Moone commeth to the full, the water will preſently boile ouer.

96. How to melt downe the filings of yron, nailes, or other ſmall peeces of yron with a ſmall fire.

TO three partes of yron put one fourth part of Antimonie powdred, in a cruſible or melting pot, ſet the ſame in any ordinarie forneſſe, and blowe a little with a paire of bellowes, (or elſe for your more eaſe you may vſe a winde forneſſe) and you ſhall finde the ſame to melt verie ſpeedily. This way you may eaſily caſt both Musket and Caliuer bullets of yron.

97 How to put ſeuerall liquors or Wines in one Glaſſe, without mixing.

TAke a Beere glaſſe of ſix or eight inches in height, and being of one equall bigneſſe, from the bottom to the toppe, then powre therein ſome faire water,

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an inch or two in height, vpon the which lay a round trencher that is almoſt equall in compaſſe with the Glaſſe. Then out of a long ſpowted Glaſſe or pot, poure gently ſome milke vppon the Trencher, and after that ſome Rochell or Connyacke white wine, and then ſome Gaſcoigne Claret wine, and after Sacke, and ſo you ſhall haue each liquor or wine to flote vpon the other without mingling togither, becauſe the fall thereof is broken by meanes of the gentle pouring vpon the trencher. Some holde opinion that the ſame may alſo bee perfourmed with a round toſte. But I thinke that you muſt haue a ſpeciall care herein, that the heauieſt liquor do lie in the bottome, and that you proceed from lighter to lighter, ſo as the lighteſt or moſt aereous or herie bee placed vppermoſt, for each thing deſires to bee in his naturall place.

98 The Art of memorie which maſter Dickſon the Scot did teach of late yeres in England, and whereof he hath written a figuratiue and obſcure treatiſe, ſet downe briefly and in plaine termes according to his owne demonſtration, with the eſpeciall vſes thereof.

YOu muſt make choice of ſome large edifice or building, whoſe Chambers or Galleries bee of ſome reaſonable receipt, and ſo familiar vnto you, as that euerie part of each of them may preſent it ſelfe readily vnto the eyes of your minde when you call for them. In euerie of theſe roomes you muſt place ten ſeuerall ſubiectes at a reaſonable diſtaunce one from the other, leaſt the neereneſſe of their placing ſhoulde happen to confound your Memorie. Your ſubiectes muſt conſiſt of Decades, whereof the firſt

hath first beene vsed amongst vs (which is the most vsuall place that is bought and sold in these dayes) he shall finde the same a most beneficiall practize, if the first doubt may be salued. Which may easily be proued in one ounce or two of guilt siluer, making a straite obseruation howe much golde was bestowed thereon.

95 Howe to knowe when the Moone is at the full by a glasse of salt water.

IT hath beene credeblie reported vnto me, that if an ordinarie drinking glasse be filled brim full, a little before the full of the Moone, that, euen at that instant when the Moone commeth to the full, the water will presently boile ouer.

96 How to melt downe the filings of yron, nailes, or other small peeces of yron with a small fire.

TO three partes of yron put one fourth part of Antimonie powdred, in a crusible or melting pot, set the same in any ordinarie fornesse, and blowe a little with a paire of bellowes, (or else for your more ease you may vse a winde fornesse) and you shall finde the same to melt verie speedily. This way you may easily cast both Musket and Caliuer bullets of yron.

97 How to put seuerall liquors or Wines in one Glasse, without mixing.

TAke a Beere glasse of six or eight inches in height, and being of one equall bignesse, from the bottom to the toppe, then powre therein some faire water,

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an inch or two in height, vpon the which lay a round trencher that is almost equall in compasse with the Glasse. Then out of a long spowted Glasse or pot, poure gently some milke vpon the Trencher, and after that some Rochell or Connyacke white wine, and then some Gascoigne Claret wine, and after Sacke, and so you shall haue each liquor or wine to flote vpon the other without mingling together, because the fall thereof is broken by meanes of the gentle pouring vpon the trencher. Some holde opinion that the same may also bee performed with a round toste. But I thinke that you must haue a speciall care herein, that the heauiest liquor do lie in the bottome, and that you proceed from lighter to lighter, so as the lightest or most aereous or fierie bee placed vppermost, for each thing desires to bee in his naturall place.

¶ The Art of memorie which master Dickson the Scot did teach of late yeres in England, and whereof he hath written a figuratiue and obscure treatise, set downe briefly and in plaine termes according to his owne demonstration, with the especiall vses thereof.

YOu must make choice of some large edifice or building, whose Chambers or Galleries bee of some reasonable receipt, and so familiar vnto you, as that euerie part of each of them may present it selfe readily vnto the eyes of your minde when you call for them. In euerie of these roomes you must place ten seuerall subiectes at a reasonable distaunce one from the other, least the neerenesse of their placing shoulde happen to confound your Memorie. Your subiectes must consist of Decades, whereof the first

his woman, and the fifth a woman, or rather the wife of that man which beginneth the Decade. And by this meanes your first, your fift, your tenth, your fifteenth, and your twentieth subiect, &c. Both forwarde and backewarde is easily brought to minde. The best of the subiects in euerie Decade may be such as are meerly differing the one from the other, vnlesse you shall like to haue some few of them resembling the profession of him that beginneth the Decade. As for example, if you begin with the Souldier, you may take a Drumme and a Target for two of the subiectes in that Decade. But if you place too manie subiectes of one nature within one Decade, you will finde them verie troublesome to remember. These subiectes woulde bee such as are most apt either to bee agents or patients, vppon whatsoeuer you shall haue cause to place in them. And therefore a fire, a Dunghill, a Carte, a paire of Bellowes, a Tubbe of water, an Ape, a Shippe, a night-gowne, a Milstone, and such like, are apt to make your subiects of, wherein you may place all such thinges as you woulde remember, and as Maister Dickson learned it, to animate the *vmbras* or *ideas rerum memorandarum*. But heerein euerie man may best please his owne witte and memorie. Nowe to proceede to the placing of these tenne subiectes, in their tenne locall roomes, you maie beginne with a Souldier, whome you may place euen in the doore or entrance confronting with a sterne and warlike looke all such as shall offer to enter that roome, whereof hee taketh the charge, you maie also imagine him with Flaske, Touch-boxe, Morion, Peece, Sworde and Dagger, &c. Because you may happilie haue occasion in the placing of some harde woorde, to vse

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some one of these more fitlie then the other. Your seconde place maie bee your Bed-steed, (if that do happily stande next your doore,) at the heade whereof, you maie by a strong imagination place an extreeme burning fire, and at the feete thereof a great and smoaking Dunghill. In your Chimney (if that likewise bee next your bed, and of a competent distaunce from the bedde) you maie imagine a Tubbe full of water. Then in your window being the next fitte place you may imagine Bellona stating with her fierie eies, and portraied in all points according to the vsual description of the Poets. Then vpon your court Cubbarde, you may place an Ape with her clogge, and in an other Window (if your Chamber haue two windowes) a Shippe vnder saile with all her tackle. Vpon your Chaire you may imagine a night-gowne furred with Foxe skinne, hauing wide sleeues, and great pockets belonging to the same. Then vpon your Table standing in the middest of the roome, you may place a Milstone, or a Drumme, and in the top of the seeling ouer your Table, a Target, a sword, or a Lute hanging downwarde. And if you want places, you may make either side of your windows to be one, and so of your Chimney: But heere you must haue an especiall care beginning at the doore of your chamber to take the places round about the chamber according as they lie, and that before you fall to the practize of this arte you may perfitely (as your *Pater noster*) remember euery place, and what subiect you haue placed therein, which you shall the better performe if you make a full and a liuelie description of euerie subiecte in your minde before you place the same. Nowe hauing gotten all these subiectes, with their seuerall pla-

tes *memoriter & adunguem*, suppose you are to remember a Cat, a Lute, and a hande, you must alwayes remember to place your first worde whatsoeuer it bee, and howe vnapt so euer it bee in the first subiect, and the seconde woorde in the seconde subiect, and so forwarde. And therefore you may imagine your Cat scratching the Souldier by the face, all the blood runne downe his cheekes, he himselfe swearing and staring and strugling with her. Your Lute beeing layde in the fire, you may imagine the same burning to coles, and all the strings cracking in sunder to your great greefe. Then you may imagine for the better remembrance of your third word, a hande raking in the dunghill till it become foule and lothsome in sight. In the like maner you may passe through the whole decade. And if you haue more woords to remember then ten, you must beginne with the next decade of your local subiectes wherein you may place other tenne woordes, and so you may proceede to what number you list, hauing subiectes inough to receyue them. Beholde heere that great and swelling Arte, for the which Maister Dickson did vsually take of euerie Scholler twentie shillings, making one whole Moneths discourse of the Theorique part thereof, but in the practique hee coulde scarcely tell which way to bestowe a full houre in demonstration. And yet to deliuer my censure hereof, according as I haue found therein, I must of necessitie confesse, that although it doe neither answere his great promises, nor the expectation of those his Schollers, whose good opinions he did entertaine so long with such golden hopes in the bettering of their weake memories, that yet notwithstanding the same is verie suffi-

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cient to procure an assured and speedie remembrãce of any 10. 20. 30. or 40. principall thinges more or lesse, that we shall take in charge to perfourme, and therfore verie necessarie for him that is charged with many errandes, and would discharge them all in such order as they are deliuered vnto him, as also for the remembrance of all such pleasant tales and histories as shall passe in table talke, from conceipted wits. In which two especial vses, I haue often exercised this Art for the better helpe of mine owne memorie, and the same as yet hath neuer failed mee. Although I haue heard of some of Maister *Dickson* his schollers, that haue proued such cunning Card-players heereby, that they coulde tell the whole course of all the Cardes, and what euery gamester had in his hande. So readie we are to turne an honest and commendable inuention into meere craft and couenage. And if there be any that doe either make doubt of this art, or shal thinke that I haue dealt too compendiously in so large a Subiect, I will according to my ancient promise, be at al times readie, and that freely, as well in this as in any other secret which I haue disclosed alreadie, or shal hereafter by any publique impression disclose vnto my Countrey men, be readie to manifest the same by plaine tearmes, or manuel demonstration, to their best contentment.

99. *How to make projection, either vppon Mercurie, Venus, or any of the rest of the base bodies, with a medicine so exalted, as that one shal extend vpon a hundreth, either* ad album, or ad rubrum, *and abiding both the touch, malleation and coppell, the golde being 24. Carots high, and the siluer 12. ounces fine.*

A multis affiatur Alchimia & tamen virgo est.

I Coulde neuer yet receiue any sufficient warrant or allowance from the true and ancient chimical Philosophers of al former ages, for the manifesting of so great a secret as I haue now in hande, in any plaine or naked tearmes. And that made *Geber* to take holde of this Posie, *Secretum tuum non reuelabis cuiquam.* And *Comes Treuisanus*, dooth so religiously holde and maintaine the secretting both of the Philosophers matter, their fire, the Colours, time and proportion that is to be vsed in the great worke, as that he breaketh out into this strong coniuration, of al such happie Alchimistes as haue alreadie accomplished their golden desires in this Art. *Quod si materiam, pondus, aut colores noueris, adiuro te per Deum viuum ne cuiquam reuelaueris.* But because I purpose not to prophane or violate those Sacred groundes of Nature in this discourse, but onely to particularize a fewe proiections, I hope that both my pardon and my fault shal carrie one date, and therefore I will proceed the boldlier in my purpose. It is a worlde to see, how euerie Arte hath gotten his Counterfeite in these daies. Howe Logike is turned into Sophistrie, Rhetorique into flatterie, Astronomie into vaine and presumptuous Astrologie, that ancient and diuine science of Alchimie into Cementations, Blaunchers, and Citrinations, ending commonlie either in coosenage, quoinage, or in *Capistro*, which made *Petrarke* to giue a Caueat in these wordes. *Caue Alchimiam, semper rebus aliquid defuerit, dolis nihil.* And againe. *Chimista qui tibi aurum suum spondet, cum tuo auro improuisus aufugiet.* This made *Chawcer* in his time to play so pleasantlie

vpon

vpon the Alchimists hollow cole, & this hath made me to touch or glance at a few other sleights of later date, thereby to admonish al yong gentlemen and others to take heed of al these mercenarie hirelinges, *Qui cum aliis mille aureos promittant, ipsi drachmam petunt. Loeus posci fabulam.* A subtile marchant forting himself of late, with an old smokie Alchimist for his better credit, as they became fellow trauellers in the higher parte of Germanie togither lighting by chance vpon a young crewe of marchants that were wel monied, and ready for any rich prize that should be offred vnto them, especially for *Iasons* barke that was laden with the golden fleece, after some salutation had, and a few words of course entetchangeablie passing betwixt them, this cunning companion of the alchimists began to parlie with them in this maner. My maisters and friends, you seeme to be men of honest parentage and condition, and most happily to be here met both for your owne good and ours. So it is, that if you will performe that secresie which is requisite in so weightie a matter as I am in purpose to commende vnto you, I will make you the moste royall Marchantes of the whole Worlde. Neither shall any of you make the hazzarde or aduenture of one Deniere, vntill with your owne eyes and handes you shall haue seene and made a sensible proofe of this my friendlie offer. It is but in vaine to vse manie wordes amongst friendes. You shall make a perfect projection your selues vpon Mercurie, *ad omne examen*; and because my selfe and my partener will bee free from all suspition of deceipt, you shall bringe the Crusible, the Coales, and also the Quicke-siluer with you, and wee will but onelie

deliuer:

deliuer you one graine of the medicine which shall extend it selfe vpon a full ounce of Mercurie, which you your selues shall likewise let fall into the crusible. A man would thinke that this were plaine dealing, and that vnlesse these men were wilfullie bent to cosen themselues, that it were impossible, to deceiue so many young eies, that watched so carefully for them selues. But now to the practise. The fire being kindeled, one of them setteth on the Crusible by direction of the Alchimist, vnder the nose of a paire of goldsmithes bellowes, who told him that for the better fixation of the Mercurie, there muste a reuerberatorie blast be made now and then with the bellowes, after the Mercurie was once warme in the melting pot. Now this Impostor had before conueied into the nose of the bellowes, an ounce or somwhat more (to supplie that which the Mercurie with his fume should carrie awaie with him) of Sol so subtiliated by often reiteration of *Aqua Regis* vpon it, as that it becam almost an impalpable powder, which when the Marchant by the appointment of the Chimist, had blowne amongst the Mercurie, he was willed to drop in the medicine, being wrapped vppe in a smal paper, and then to leaue the crusible in the fire, vntill the medicine and the Mercurie were both incorporated together, and that the Mercurie were sufficientlie tincted into Sol, and within one halfe hour (after he had first caused them to melt downe an ounce of fine golde in an other crusible, and to put the same to the first worke, for the better fusion of the powder) he willed to be taken out of the fire and conueyed into an ingot, and the same being colde became twoe ounces of perfect Sol, abiding both the hammer, the test, and the horne of Antimonie. It is not to bee doub-

doubted, but that theſe yong gallants were right ioyful of this good ſucceſſe, deſiring nothing more then to become Lulliſtes, offering to exchange their freedome both of the olde Haunce and of the newe, for this multiplying Art. Now this geere worketh like wax, and the Alchimiſt demaundeth 2000. dollers, for the prouiſion of coles, furnaces, ſaltes and Minerals, but eſpeciallie to engroſe all the Mercurie, that could be gotten, leaſt either it ſhould riſe to an exceſſiue price, or be tranſported into Spaine, for the refining of the Indian oare. The money is foorthwith deliuered by weight, becauſe there muſt bee no time loſt in the telling, with a charge to vſe all expedition that could be for the gathering of the Mercurie together that was to be gotten far and neere. The ſubſtãce of this hiſtorie is already deliuered, I will not ſtande long vpon the circumſtance. The Alchimiſt hauing fingered the monie, beginneth to erect furnaces, and entertaineth them with a few diſtillations, calcinations and ſublimations, teaching them howe to make *Lutum Sapientiæ*, *Aquam ſeperationis*, *aquam regis*, *oleum vitrioli*, *ſalis*, *& ſulphuris*, to congeale Mercurie with the ſpirit of Saturne, to make *ſaccarum Saturni*, to whiten their teeth withall, to blanch copper with *Arſenick*, to melt one part of Luna with 3. parts of Venus together, and then to forge plate thereof, and by a certen ebulition, to make the ſame diuerſe times to touch equall with our beſt ſtarling, or higher according to the fineneſſe of the ſiluer that was mingled with Venus, all this (with an infinite number of ſpagiricall experiments) was performed, both to paſſe away the time without tediouſneſſe, whileſt the Philoſophers egge (which required 10. moneths digeſtion, was hatching in *Cælo philoſophorum*) as alſo

to gain ỹ more credit with the marchants, whereby a man of these single gifts, might not be feared or mistrusted of his flight, which both he & his companiō were dailie practising, and in the ende finding good opportunitie they put the same in execution, leauing them that had most need to blow at the cole. I doo verelie beleeue that if the old D. of Florence were aliue againe, he would haue outbidden the marchants for this secret, whose distillatorie vessels, furnaces, & other chimicall instrumentes, were all of siluer as I haue heard it often reported. But now to giue a few Items more against these Impostors, before I conclude, Let euery man that is besotted in this Art, and dependeth whollie vpon other mens practises (himselfe not beeing sufficientlie acquainted with those great and hidden Maximes of nature) take heed also of all false and double bottomes in Crusibles, of all hollowe wandes or roddes of yron, wherewith some of these varlettes doe vse to stirre the mettall and the medicine together, of all Amalgames or Powders, wherein any Golde or Siluer shall bee craftilie conueyed, of Sol or Luna, first rubified and then proiection made vpon it, as if it were vppon Venus hir selfe: but speciallie of a false backe to the Chimney or furnace, hauing a loose bricke or stone closely ioynted, that may bee taken awaie in an other Roome by a false Sinon that attendeth onely the Alchimistes hemme, or some other such like watch-worde, who after the medicine and the Mercurie put together in the Crusible, entertaineth *Balbinus* with a walke and with the volubilitie of his toung, vntil his confederate may haue leysure enough to conuey some Gold or Siluer into the melting porte, which were able to deceiue the best sighted Argus in the world.

By

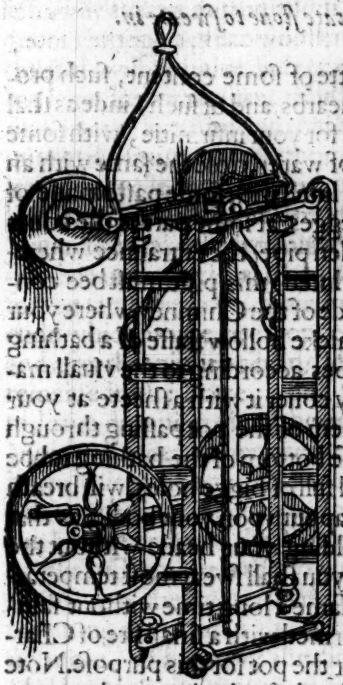
By these fewe legerdemaynes, I hope many thousandes will be sufficientlie warned, of these wandring & roguing Alchimists, who since the death of Cuckow, Stannie, and Feates, and the rest of that rable, are become the verie Iuglers of the Lande, yea infinitelie woorse than they: For that our auncient Iuglers would shewe all their iugling trickes for a groat or a Testern, and though nowe and then they made shewe to transmute siluer into Counters, or money out of one mannes hande into an others, yet in the ende, euery man returned with the Coine which he brought in his purse againe, whereas these Rascalles doe not onelie conuert other mennes monie wholelie into their owne purses, but procure also a great losse and expence of time, which might haue beene many waies better, but no way woorse employed, and can neuer bee redeemed againe. Wherefore to conclude with *Petrarch*, *Dia vt ea sibi præstet quæ promittit aliis, primumque suam pellat inopiam. Est enim ferè mendicum genus hominum, cumque se pauperes fateantur, ditare alios volunt, quasi aliena illis quam propria molestior sit paupertas; sic vt miseri se alios misereri dicere soleant impudenter, & ignotis etiam interdum magna promittere: O turpis promissio, & o stulta credulitas.*

Too. How to nippe or close a Glasse with a paire of hot tongues, which is commonlie called Sigillum Hermetis.

PLace a violl or other glasse hauing a long necke, in a pan of ashes, suffering one inch of the neck only to peer aboue ỹ ashes, then lay charcole round about the neck, & close to ỹ same (som do also couer the viol

with a round glasse fitted to the mouth, both to keep out the ashes and also the extreame heate of the fire from striking downward into the belly of the glasse, couering also the verie toppe or sumitie of the glasse with charcole, two or three inches aboue the same, then make fire at the toppe and let it kindle of it selfe downeward, and if that heat be not sufficient, vse also the blast of the bellowes, for you must force the neck of the glasse euen to a heat of fusion, and when it is readie to melt, then nip the same close together with a paire of tongs beeing red hot, which for the same purpose must be kept in a strong glowing fire, and if you can take it in his iust time, you shal close the same so strong lie, that it is impossible for any ayre to issue out. You may safelie keepe any distilled oile or water in a glasse so nipped. But take heed how you keepe the iuyce of any strong or fierie plant, as also of any decoction that is apt to worke it selfe into a bodie, as new must, or the strong worte either of ale or beere, least you doe not onelie mispend your time, lose your liquor, and breake your glasse, but also get a shrewde turne your selfe, if you happen to be within gun-shot. For there be certein wilde spirits within, who can indure no imprisonment, but if they can find no waie, they will make waie, bearing out before them both locke, bolt, and hinges, and yet they are such as the Philosopher can not want, though the vulgar sorte know no vse of them.

101 *A Wagon to bee drawne with men in stead of horses.*



THe ioynts and other parts of this wagon are so knit together with hookes & pinnes, as that it may easily bee dismounted and taken in sunder, whereby many of the may be couched in a narrow roome, and will lie close together in a trice. It is to bee drawne with six men, whereof two of them muste labour at the fore-cariage thereof, and at either wheele other two, which muste woorke by winding of the handles, (which are of purpose fastened both to the Naue of the wheele, and axletree) either forward or backward as occasion serueth. The vse therof is to conuey their vittails and other necessaries from place to place when the mariners or souldiers haue cause to land in some coūtries where the place affoordeth no horse or other beastes that are fit for labour or cariage. I know not the Authour of this inuention, but because it came so happilie to my handes, and catheth some good conceipt

with it, I thinke it necessarie to be published amongst other seruiceable deuises for the sea.

102 A medicate stone to sweate in.

PVt into a Brasse potte of some content, such proportion of sweete herbs, and of such kinde as shal bee most appropriate for your infirmitie, with some reasonable quantitie of water, close the same with an apt couer, and well luted with some paste made of flowre and whites of egges, at some part of the couer you must fasten a Leaden pipe (the entraunce whereof must also bee well luted) this pipe must bee conueyed through the side of the Chimney where your pot standeth, into a thicke hollow staffe of a bathing tub crosted with hoopes according to the vsuall maner, whereby you may couer it with a sheete at your pleasure. Nowe the stem of the pot passing through the pipe vnder the false bottom of the bathing tubbe which must bee bored full of bigge holes, will breath so sweet & warme a vapour vpon your bodie, as that (receyuing aire by holding your heade without the tub as you sit therein) you shall sweat most temperately, and continue the same a long time without fainting. And this is performed with a small fire of Charcole maintained vnder the pot for this purpose. Note that the room would be close wherin you place your bathing tub, least any sudden cold should offend you whilest your body is made open & porous to the ayr.

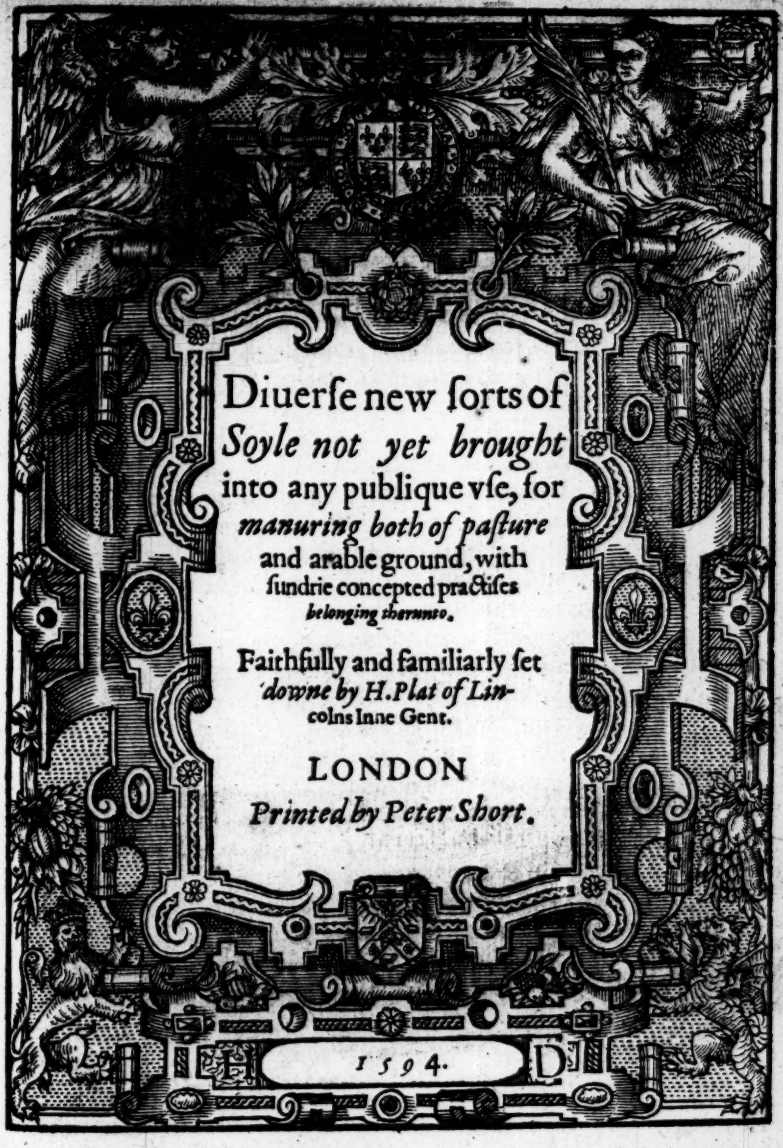
103 The Arte of refining of Sugar.

MAke a verie strong Lee of vnsleckt Lime, wherein dissolue as much course Sugar as the Lee will beare,

beare, then boyle the same a little, and presently put in the whites of egges first beaten into Oyle, which will make it to giue vp a scumme, which must bee taken away as long as any ryseth. Then poure all the liquors through a great woollen cloth bagge, and so the filth will remaine behinde in the bagge, then boyle the liquor againe, till it bee ripe, which you shall knowe by taking two or three droppes of the liquor and putting them vpon a plate of colde yron, letting it coole, which when it is congealed a little like salt, or as a meane betweene Syrruppe and hard Sugar, then take the lyquour from the fire, and poure out the same into the earthen Potte or Moldes made for the same purpose, hauing a hole in the smaller ende which muste bee stopped for one night after, and after that night open it, letting all the substance remaine in the Potte, vntill the syrruppe beginne to leaue dropping (into the nether Pot wherein the Moldes stande) or droppe verie sloulie at the little hole, this Syrruppe (as I take it) is that which they call *Malassoes*. Then take Potters Claie, and Clay the broade endes of the Potte ouer therewith, and as that Claye sinketh downe by reason of the shrinking of the Sugar, fill them vp with more Clay, repeating the dooing thereof till the Sugar shrinke no more. Then take the Sugar loaues out of the Moldes, and put them in a Stoue, till they bee drie and harde, and after binde them vppe in Papers according to Arte. Note that if the Sugar after the first boyling, and beeing powred out into the Moldes and beginning to congeale, appeare to bee ouerblack or foule, and shall not become white at the first in the same Moldes, but some fecicall part remaine therein,

therein, then it must be newe boyled with Lee in all pointes *vt supra*, till it bee perfectly white. Also the clay must be potters clay, tempered like pappe in water, and the same must runne through a Colander full of holes vppon the bottome of the Suger loafe, for the softnesse of the Sugar will not suffer the pressing downe of any stiffe clay. This receipt though happily it want some of the circumstances in the Arte of refining, yet it should seeme the matter of substaunce is sufficiently vnfolded herein. I had the same of a Gentleman of good Worship and a great artist.

FINIS.



Diuerſe new ſorts of *Soyle not yet brought* into any publique vſe, for *manuring both of paſture* and arable ground, with ſundrie concepted practiſes *belonging thereunto.*

Faithfully and familiarly ſet downe by H. Plat of Lincolns Inne Gent.

LONDON

Printed by Peter Short.

1594.

Diuerſe new ſorts of
Sobe nes yet brought
into any publique vſe, for
mannring both of paſture
and a table ground, with
diuerſe conceited praſtis
belonging thereto.

Pleaſantly and familiarly ſet
downe by H. P. for Lin-
colnes Sonne.

LONDON
Printed by Peter Short.

A Philosophicall discourse as well vpon the Common, as vpon the vegetatiue and fructifying Salt of Nature.

Auing found by sundrie obseruations, drawn from experience her selfe the vndoubted mother of all true and certaine knowledge, that all sorts, and kindes of Marle, or soyle whatsoeuer, either knowne or vsed alreadie for the manuring, or bettering of all hungry and barren grounds, or as yet concealed, and kept in the bosome of Nature, from the common and vulgar sort of people: do draw their generatiue and fructifying vertue from that vegetable salt (which M. *Bernhard Palissy* in his learned and philosophicall treatise, *de la nature des eaux, & fonteines*, doeth so often tearme by the name of a fift element, whereon all our auncient Philosophers did scarcely dreame) I haue thought good, because I would not seeme fantasticall, and ouerweening in mine owne conceite, as if I were the first broacher of this opinion: before I proceede to anie practicall discoueries herein, first to set downe that short & sweet discourse of *Franciscus Valetius* in his booke *de sacra Philosophia, cap. 34.* vpon the miracle contained in the fourth booke of the kings and second Chapter, and then to amplifie the same by some of those manifest experiments which are common in this land alreadie, and by some others of more value, and yet of lesse charge, although as yet not knowne, or at the least not published by any former Authour.

In the fourth Booke of Kinges, and second chapter. 19, 20, 21, and 22. verſe, it is thus written. And the men of the Citie (that is of Hierico) ſaide vnto Eliſha, Beholde ſir, the dwelling of this Citie is pleaſaunt as thou thy ſelfe ſeeſt: but the Water is naught, and the grounde barren. Hee ſaide, bring mee a newe Cruſe, and put ſalt therein. And they brought it him. And hee went vnto the Spring of Waters, and caſt the ſalt therein, and ſayde, thus ſayeth the Lorde, I haue healed theſe waters: there ſhall not come hence foorth either death, or barrenneſſe. So the Waters were healed vnto this day according to the ſaying of Eliſha which he ſpake.

Whereupon Valetius entreateth in this maner. There is no doubt but that this, as alſo diuerſe other ſignes, and tokens were ſhewed vnto the people of Iſrael by way of figure, as Saint Paule dooth teſtifie, and that the ſame dooth ſignifie ſome other purifying, and cleanſing of waters, and that it was done in token of ſome Sacrament. But whether there bee anie regarde to bee had of Nature in this myracle or no, wee are at this preſent to conſider, and examine. For I haue oftentimes obſerued euen in the performing of myracles, that for the moſt part, it pleaſeth God to vſe ſome naturall cauſe, and that vppon manie, and excellent reaſons him mouing thereunto. Wherefore ſeeing the barrenneſſe of the earth is cured by the Waters, it is manifeſt that there is nothing elſe meant in this place, but that the Waters were of ſuch kinde, and quantitie, as that the earth beeing watered therewith, became barren by their corruption. And it ſeemeth by al probabilitie that this fault was in their ſaltneſſe, both

because

becauſe it is an ordinarie accident to many waters, whereby they are made vnwholſome to be drunk, and becauſe that, of all other things doeeth moſt of all make the earth vnfruitfull; whereupon it grew into a cuſtome with our auncient forefathers, that all ſuch ground as became forfeit and confiſcate vnto the Crowne, by reaſon of any high and capitall offence committed, ſhould be ploughed and ſowed with ſalt, which we read to haue beene doone by *Abimelech*, in the ninth Chapter of the booke of Iudges, when he had deſtroyed the citie of the Sichemites, and in the Pſalme it is ſaid: He hath deſtroyed a fruitful land with ſaltneſſe, for the wickedneſſe of the inhabitants. And therefore ſaltneſſe is a principall meanes to make the ground vnfruitfull, and the ſowing of ſalt thereon bringeth forth barrennelſe, and a curſe vpon it. But how then commeth it to paſſe, that if the waters of Iericho, did hereby both become vnſauorie for the people to drinke, and vnprofitable for the encreaſe of the earth: that there ſhould be any naturall vertue in ſalt, to helpe and ſweeten them, eſpecially when S. Iames ſaith in his Epiſtle and third chapter. My brethren, can the figtree bring forth grapes, or the vine bring forth figs? So neither by the ſame reaſon, can ſalt make waters to be freſh & ſweet. Neither can it bee denied, but that as contraries are refreſhed by their contraries: ſo likewiſe that the ſaules of all things are increaſed by their like and ſemblable Natures. Therefore one of theſe two muſt of neceſſity fal out, that either in the myracle of *Eliſha*, there was no regard had of nature at all, but that there was a meere contrarie courſe to nature vſed, thereby to make the myracle the greater (for we read of ſ like often in the holie Scriptures) or elſe that the fault of theſe waters

was not in their saltnesse, but rather in some other rotten and putrified corruption, which as in all other things, so in water most especially is corrected by the addition and mixture of salt. For salt beeing of an hot and drie nature, and by solution being verie apt to incorporate therewith, consumeth all the putrified vapors, or partes thereof, and correcteth all the putrifaction which it findeth, and it maketh all good Waters to keepe sweet and sounde the longer. For the Mariners themselues can witnesse, that such waters as be somwhat brackish, be the best for long voiages, because they will last longer than others: and therfore they do often water their ships from springs that bee neere the sea. And furthermore those that doe search more narrowlie into the nature and property of all things, doe confirme affirme, that such springes as be offensiue in smel, or that carry any bad or corrupt tast with them, are no waie better to bee purified & cleansed, then by casting of salt into them. Therefore this seemeth verie probable for that (besides all which I haue already alledged) waters doo become most deadlie and contagious, by their putrified and offensiue smels, rather than by their saltnes. Yea the saltnesse of the waters (vnlesse it be extream, as in the Sea of Sodome, which for that it engendreth no liue thing, and also destroyeth whatsoeuer falleth into it, it is called by the name of the dead sea) doth neither tend to destruction, neither is it offensiue to the fertilitie of the ground (but rather beeing meanely brackish, and thereby also it selfe not subiect to putrifaction, as wee may beholde in the sea) it maketh the waters themselues most fruitfull. Neither is there any place in the whole world where that generatiue vertue doth more abound, or where there is

more infinit generation & multiplicatiō of creatures, then in the wide Ocean. And I doo verely beleeue y the spirit of God which in the beginning did spread it selfe vpon the waters (which I doe hold to be a certen fire) did make them to be of that nature, that is to say, thicke and salt, and by that reason they are much more apt for the generation of all creatures, then any fresh waters whatsoeuer. Now then euery kind of salt water is not hurtfull to plants, neither is it hurtfull to al alike, but there be certen plantes which prosper best in salt waters, & those springs, which be somwhat brackish are rather vnfit to make drinke for mans body, then to water the grounds. For nothing is more vnsauory in our drink then salt, because that our thirst doth naturallie desire to bee satisfied with that which is cold and moist, whereas these watering dewes doe rather represent a food, then a bare drinke to y earth, for they giue a kind of norishment vnto plantes, neither do they offend vnles they be ouersalted like brine. So that according to the measure of saltnesse, these brackish waters be either good or hurtfull to al kind of vegetables for if they sauour of the excesse then they burn, and dry vp the ground, and so make it barren, but if they bee moderatelie salt they agree well with diuers plantes, and bee not verie hurtfull vnto any.

So likewise all other liuing Creatures by the extreamitie of saltnesse are destroyed vtterlie, as wee see by the Redde Sea, for they are euen parched awaie therewith, but if that the same bee more temperate (as in all other Seas) many Creatures are ingendered thereby, and doe growe into huge and mightie bodies, and bee more sounde then any other Creatures, and many of them beeing dead,

may

may bee kept a long time, although I am not ignoraunt, that some kindes of fishes cannot endure the least saltnesse that may be, neither can they continue, or liue but in the fresh water onely, and some others againe doo thriue and prosper in either of them: such is the great varietie of natures. But vnto man, and to diuers other land Creatures, the eating of much salt is very contagious, because it maketh the bloud salt, and it breedes barrennesse to mans bodie by the extreame sicceitie thereof, and it maketh our seed of nature too thin: but the same being moderately taken, is very stirring in our bodies, and prouoketh them to venerious actes, whereby it helpeth to the generation of mankind.

And therefore me thinks, that all those controuersies about the seueral natures of salt, are but friuolous wherein some doo contend that it engendereth barrennesse, and death, and therefore it was vsed to bee throwne vpon cursed grounds, and others woulde haue the same to be of a fruitful and incorrupt nature, which made the Poets to faine, that Venus was born in the sea, by meanes of the sperme of the Gods that fell into it, and so they called hir ἀφροδίτην of the some or froath of the sea. And here by the waie I wil make bold also, to insert the opinion of that learned, and great Magitian *Io. Bap. Por.* 347. who writing vpon the helpes of conception saith, that salt doth greatlie further procreation, for it doth not onely stir vp lust, but it doth also ministre fruitfulnesse. And therefore the Egyptians did vse to feed their bitches with salte meates, when they found them vnapt for generation. And Plutarch doth witnesse, that ships vpon the seas are putred and poisoned oftetimes, with exceeding store of mice. And some hold opinion, that the

females

females without any copulation with the males, doe conceiue onely by licking of salt. And this maketh the Fishmongers Wiues so wanton, and so beautifull. Which caused the Egyptian priests (by the report of Plutarch) most religiously to abstaine from salt, and salt meates, for that they found them verie stirring, and prouoking to venerie. Wherefore since the nature of salt is to defend and take away all putrifaction, which leadeth euery thing vnto destruction, it seemeth vpon good reason that this was the salt of the waters of Iericho, and that *Elisha* did hold a naturall course in correcting of them: God himselfe exalting aboue nature that naturall propertie which hee had first giuen vnto salt: For otherwise, neyther so small a proportion of salt, woulde haue sufficed to haue purified so great a quantitie of Waters, neither could these waters haue lasted sweet vntill this daie. Thus farre *Valetius*.

Nowe that we may yet haue a farther, and more inward speculation into the nature of salt, it shall not be impertinent to our purpose, to set downe and gather, all those obseruations, which I haue also culled and gathered out of twoe larger Treatises, the same being euen wrung out of the bowels of the earth, by that learned husbandman, maister *Bernard Palissy*, whereof the one is entituled, *Des sels diuerses*, and the other *De la marne*, wherby all those that be ỹ true infantes of Art, may receiue a full light into nature, which dooth heere present hir selfe in all hir royaltie, with her *Cornucopia* in her hande, and the ignoraunt Farmers may also gleane with them, a fewe lose and scattered eares, to make so much breade of, as may relieue their hungrie bellyes. And hauing performed this collection, I will sette downe such particu-

ler practises, as haue their full warrant from these two Theorickes, and may serue in diuers partes of this land, either for arable or pasture groundes, where the ordinarie soile or dung doth faile vs.

A philosophicall discours vpon salt.

There are so manie sortes and kindes of salt (saieth Maister *Bernard*) that it is impossible for any man to number them all, and farther I tell thee that there is not any one thinge in the worlde, which dooeth not participate of this salt, whether it be man, beast, tree, plant, or any other kinde of vegetable, yea euen the mettals themselues, and that which is more, there is not any kind of vegetable whatsoeuer, that coulde growe or flourishe, without the action of salt, which lieth hidde in euerie seede, and besides all this, if the salt were deuided from the bodie of any liuing man, or from the stones which are wrought vppe into strong buildinges, or from the principall postes, the Rafters, and the beames of any house, they woulde all fall to powder, in lesse than the twinkeling of an eie. The like maybee said, both of yron, steele, gold and siluer, and all other mettals. And therefore hee that woulde knowe of mee howe many kindes of salte there bee, I shall bee forced to answer him that there be as many, as there be seuerall sortes of tastes, or sents.

Diuersitie of salts.

Coppres is a salt, Niter is a salt, vitrial is a salt, allom is a salt, Borras is a salt, Suger is a salt, Sublimate is a salt, Saltpeter is a salt, the salt gem, *Le Salicor*, the Tartar, sal Armoniacke, all these are diuers kindes of saltes, and if I would take vppon me to name them all, I shoulde neuer make an ende. The salt which the Alcumistes call *Sal Alcali*, is extracted from an herbe, which groweth in the salt marishes of the Iles

Isles of *Xantoigne*. The salt of Tartar, is nothing els, then that salt of the reasons which giueth the taste and sauour to the Wine, and defendeth it from putrifaction, and therefore I say yet againe, that the sauour of all things proceedeth from salt: which alone causeth the vegetation, perfection, maturitie, and the whole good that is conteined in euery thing that nourisheth.

And although there bee diuers sortes of these and other vegetables, whose saltes be more fixed and of harder solution, than the salt of the Vine, *& dusalicor*, neuertheless I say, that in all manner of Trees, and plantes, there is more or lesse of this salt, *videlicet*, so much as is sufficient for them: aswell as in those others before mentioned, for otherwise manie kindes of Ashes woulde not serue to whiten linnen cloathes: by the effect of which ashes thou mayest easilie vnderstand that there is salt in all thinges. And thou art not to thinke, that the ashes bee of strength to whiten, but onelie by the vertue of their salt, for otherwise the selfe-same ashes might serue diuerse times. The proper ties of salt. Salt the strength of ashes.

But in so much as the salt which is within the saide ashes, commeth to bee dissolued in the water, wherin they boile, it penetrateth the linnen, and by his vertue sharpenesse, and biting, all the filthe and foile of Cloth is dispearsed, mollified, and carryed downewarde with the Water, which afterwardes becommeth a Lee, because that therein resteth and remayneth all such salt as was in the ashes before, beeing now dissolued by the action of the water, and the ashes by this meanes hauing lost their saltnesse, haue not any more strength to whighten anye

other linnen, and men cast them out into the streetes as altogither vnprofitable. Marke yet one other example. When the salt-peter-men seeke to drawe out the salt peter from the earth, they worke in the same manner as is before set downe for the making of the Lee, and when they haue gotten out the salt peter, both the ashes and the earth, out of which they haue now taken the salt, are altogither vnprofitable: for that there is no more salt lefte which was the principall worker.

And yet for thy better instruction, consider those men which tan the hides of beasts, they take y barkes of Oake, and hauing dried and broken them, they lay them amongest the hides in their tanning fats: and when the hides haue remained their full time with those barkes, they cast them awaie as a thinge of no further vse (although I knowe that in diuers places where fewell is deare, they vse to make cloddes, or turfs of them, in the likenesse and forme of cheeses, which they cause to be dried, and so burne them for want of other fiering) but the ashes of them are nothing woorth, because the salt of them is already spent.

Doost thou not vnderstand heereby, that it is not the barke, that hath hardned and tanned the leather, but the salt which is conteined therein? For otherwise the same barkes woulde serue againe, but because the salt is dissolued it is soaked into the Leather, by reasonne of his moysture, which hath made an attraction thereof to serue his own turne. It is also to bee noted that in al kinde of woodes, the salt is in a manner wholelie in the barkes, and that such wood as is barked dooeth neuer yeelde any strong ashes. Mounsieur Sisly Duke Mountpen-

sier

ſier his Phiſition ſhewed vnto mee vppon a certaine time a ſticke of Sinamon, which was about foure foote in length, and an inch thicke. I taſted of the vttermoſt barke thereof, and it had the liuely, and naturall ſauour of the beſt and ſtrongeſt Cinamon, whereas in al the reſt of the ſticke, there was no more taſte then in a ſtone. And this is the reaſon why the Tanners account of nothing elſe but the barkes, becauſe of the ſalt which is in them, for otherwiſe the reſt of the wood being wrought into powder, might ſerue their turne as well. And for further proofe that there is ſome ſalt in euerie thing, we read that the Egyptians were woont to vſe Niter, and other Aromaticall bodies, about the dead bodies of their kings, and princes, which wee doe call enbawming: which Niter is a preſeruing ſalt, that defendeth from putrifaction. And their fleſh ſo embaulmed is called *Mumia*, which the Egyptians doe finde to bee verie medicinable, and for my part I thinke the ſame more wholſome then potable golde. There be ſome in our time that woulde faine imitate that ancient manner of enbaulming, and ſeeke to make a kinde of *Mumia* of their bodies who haue ſuffered death for ſome capitall offence, but they falle herein, and their *Mumia* doth ſoone corrupt, and putrifie, for want of ſuch excellent Aromaticall drugges as thoſe ancient Egyptians vſed. For now it is generally holden, that all thoſe ſweet ſmelling ſimples, all the Rubarbe, Gums, and other Aromaticall ware, are greatly ſophiſticated before they come to our handes, and our common ſalt is not of that vertue to preſerue things withall, as thoſe aromaticall drugges which come from the bleſſed Arabia, and other hote Countryes. And that euerie thing hath ſome ſalt in it, it is mani-

Glasse of all kinds of ashes

feast, for that it is possible to make Glasse of all kinds of Ashes, although some sortes of them bee of harder fusion or melting than others. And were there not some salt in all trees and hearbes, it woulde bee a thing most impossible to make Glasse of them. The secrete vertues also which lie hid in salt confirme the same. For salt whiteneth all thinges, it hardeneth all things, it preserueth all things, it giueth sauour to all things, it is that Mastick that gleweth all things together, it gathereth and knitteth all thinges all matters, and of manie thousand peeces it maketh one masse. This salt giueth sounde to all thinges, and without the sounde no mettall will ring in his shirle voyce. Salt maketh men merrie, it whiteneth the flesh, and it giueth beautie to all reasonable creatures, it entertayneth that loue and amitie which is betwixt the Male and Female, through that great vigour and stirring vppe which it prouoketh in the engendring members, it helpeth to procreation, it giueth vnto creatures their voyce, as also vnto Mettalles. Salt is the cause that manie small pibble-stones beeing subtelie powdred, become one masse, whereof they make our drinking Glasses, and all other sortes of Table-vessell, and by the power of salt, all substaunces maie bee brought into transparent bodyes. And it is salt that maketh all seedes to flourish, and growe, and although the number of those men is verie small, which can giue anie true reason whie dungue shoulde doe anie good in arable grounde, but are ledde thereto more by custome than anie Philosophicall reason, neuertheless it is apparaunt, that no dungue, which is layde vppon barraine groundes, coulde anie way enrich the same, if it were not for the salt which the strawe

The vertue of Salt.

and

and hay left behinde them by their putrifaction. And therfore al these simple sots which leaue their muckheaps abroad, and subiect to the weather, shew them selues to bee but meane husband men, and that they neuer tasted of any true naturall philosophie. For the raine which falleth vpon these dungue-hils, flowing downewarde into the vallyes, dooth also carrie with it the salt of the dungue which dissolueth it selfe with the moysture: whereby the soyle beeing afterwarde laide abroad vpon the land, dooth little or no good vnto it. But if thou wilt not giue credite vnto my speech, yet marke howe the labouring Hinde, when hee carryeth his dungue to the feelde, howe in discharging of his loades hee leaueth it in certaine heapes together, and a while after hee commeth to spread it all ouer the ground, and layeth the same in equall leuill, and afterward when the same feeld happeneth to bee sowed with corne, thou shalt alwayes finde the corne to be more greene and ranke in those places where the same heapes were first layde (after they haue ben there some reasonable time) then in anie other place in all the ground besides, and this commeth to passe by reason that the raine which fell vppon them, hath caried euen the salt through them, and conueied it into the earth that was vnder them. Wherby thou maist easily gather that it is not the dung it selfe which causeth fruitfulnes: but the salt which the seed hath sucked out of the ground. And herevpon it commeth to passe that all excrements as well of man as beast, serue to fatten & inrich the earth. But if any man will plow, and sow his ground yearely without dunging the same, the hungry seede in time will drinke vp all the salt of the earth, whereby the earth being robd of her salt, can bring forth no more fruit,

muckheaps ought to be couered.

All excrements enrich ground.

fruit, vntill it bee dunged againe, or suffered to lie fallow a certaine time: to the ende that it may gather a newe saltnesse from the cloudes, and raine that falleth vpon it. But I speake not here of common salt, but of the vegetatiue salt. For there bee many that hold opinion, that there is no greater enemie to all seeds then salt, and that because in ancient time when any wicked, or desperate villain had committed any notorious crime that deserued death, hee had sentence giuen him to haue his house raced, his ground turned vp, and sowed with salt, that it might neuer after bring forth fruit againe. I know not whether there bee any Countrie whose salt dooth not agree with corne: but I am sure that vpon the little hillockes in the salt Marshes of *Xantoigne*, men doe mow as good grasse as in anie other place that euer I came in. And those hillockes doe come of the groundes and washinges throwne vp from the bottome of the same Marshes, which are as brackish as the sea water, and yet neuertheless I did neuer see any fayrer corne in my life then groweth in them. And therefore I know not why our Iudges haue taken occasion to sowe salt on the offenders groundes, to bring a curse vppon them, vnlesse there happen to bee some such Countrie where salt is the meere enemie of all seedes. But to continue our first course, and to proue that salt is no enemie, either to the vegetatiue, or sensatiue natures. We see that the Vines of the countrie of *Xantoigne* which are planted in the midst of the salt marshes, doe bring forth a kinde of blacke reason, which they call *Chanchets*, and wherof there is a wine made that is nothing inferiour to our Hipocras, in which they vse also to dippe their toasted bread, as they doe in Ypocras. And these Vines are so fertile that one

plant

plant of them dooth bring foorth more fruite, then sixe of those that growe in Paris. See nowe what reason I haue to thinke that salt is so farre off from beeing an enemie to Nature, that on the other side it doth rather helpe the goodnesse, sweetnesse, maturitie, generation, and preseruation of the said Vines. And not onely salt dooth giue his ayde, and helpe herein, but also the ayre it selfe, by his salt exhalations. In the aforesayde Islandes, and within the salt Marshes, there is a salt hearbe founde called *Salicor*, whereof the most beautifull Glasse of all other is made, and there is also gathered that *Xantonique* Wormewood, so called of the Countrey where it groweth. The same heath hath this propertie, that if one doe boyle the same, and with the decoction thereof doe temper a little meale, and make it into paste, and so frie the same either in larde or Butter, and eate thereof, it will expell, and driue out all such Wormes, as are either within the bodies of men, or children. And before I vnderstood thereof, I had sixe children that died of the Wormes which I did manifestly perceiue as well in the anatomizing of their bodies, as also for that oftentimes they voyded them at their mouthes, and when they were drawing to their ende, these Wormes would issue at their nosthrils. My purpose is not hereby to proue that common salt doth agree with all kinde of plants, but I am well assured that the salt Marshes of *Xantoigne*, doe bring foorth all maner of fruites that are planted there, and the same so pleasaunt, as in no place more where I haue trauayled.

All wilde hearbes, thornes, and thistles, doe prosper so exceedingly there, as no where better, which is a sufficient confutation to those which would haue

ſalt to be enemie to all plants. For if it were an enemie to plants, it ſhould alſo bee an enemie to the nature of man, which the Burgonions will by no meanes confeſſe, for if they were ſo perſwaded, they woulde neuer haue ordained that ſalt ſhoulde bee put in the mouthes of their infants at their baptiſme, whereupon they are tearmed the powdred Burgonions. Neither will the beaſtes agree that ſalt is an enemie vnto them, for the Goates will deuoure as much thereof, as you will giue them, and they ſeeke out purpoſely for briniſh walles, againſt the which men haue made water, euen to licke them. And the Pigeons when they happen to find an olde wall whoſe temper was made of Lime and Sand, and beginneth once to molder away, they will neuer leaue it, nor bee driuen from it.

Now ſome ſimple Clowne that neuer knew what learning ment, will perhaps imagine, that they feede vpon the ſande, but that is but a blind conceipt, for it is not digeſtible, whereas this is the verie potable Golde of the Pigeons, and therefore wee are not to thinke that they ſeeke for ought elſe then the Lime that is in the morter, and that for the ſaltneſſe thereof. And if they happen to ſwallow one graine of ſand, it is againſt their willes.

The Oiſters for the moſt part are alſo nouriſhed by ſalt, and their ſhels are compounded of it which they themſelues haue wrought vp, and it is very apparant that it is ſo, for that their ſhels being caſt into the fire, do make a crackling much like to common ſalt. And if ſalt bee of that vertue as to woorke an erection of thoſe engendring parts (as I haue ſaid before) it is a thing moſt certaine and well approoued, that Oiſters themſelues are of the ſame operation: which appro-

ueth my former allegation, that thoſe Oyſters are for the moſt part nouriſhed with ſalt. But for a further confirmation, that ſalt is not enemie to anie vegetatiue nature, let vs a little beholde the worke of the plaine countrimen of *Ardenna*, in diuers places wherof they cut down woods in great quantitie, and thoſe they couch & range in the earth in ſuch ſort, as that there may be drawne vnto them ſome aire from belowe, then they lay great number of cloddes of earth vpon the ſame wood, yet ſuch as are full of ſwarth, and graſſe, and afterwardes they kindle the Wood which lyeth thus couered with the turfe, and after they haue burned them all togither ſufficiently, they diſperſe them ouer the face of the whole ground, as wee vſe to doe in our dongue, then they plough it, and ſowe Rie there, where nothing elſe but Wood grew before, and the Rie commeth vp aboundantly, and this they do euerie ſixteene yeares. And in ſome partes but ſixe yeres, and in ſome parts but four yeres onely, wherby the ground being ſpared ſo long, bringeth foorth afreſh as much wood, and as great as at the firſt. And of this wood they fell ſo much as is ſufficient to enrich the ground for one yeares crop, and burne the ſame with their turfes togerher as before: and ſo conſequently euery yeere vntill the number of ſixteen yeeres be expired, and then they begin again at the firſt peece of ground which they had ploughed 16 yeeres before, in the which they find the wood of as great a growth as in the beginning. Hereby it is manifeſt, that the ruſticall opinion of thoſe clowniſh people of that Countrey is vtterly falſe, who thinke that the heate of theſe fires, and the aſhes, are the onelie cauſe which maketh their cold countries fruitfull, whereas in deede it is the ſalt of theſe trees,

hearbs, and rootes being burnt which they haue left behinde them. And therefore if my wittes were able to search into all the vertues, and properties of salt, I would thinke to doe wonders therby. For euen the Alcumists giue a blaunche vnto Venus with the salt of Tartar, or some other kind of salt. And salt is a most necessarie thing for the Diers, because that Alom which is a sale, draweth vnto it the colors of Brasill, and of Galles, and of other matters, and so maketh both cloth, silke and leather, to take their die the better, insomuch as the Diers when they woulde die a white cloath into a redde, are sometimes forced to dippe it first in Alome water. Yea, and some kindes of salt doe so hardeny ron, and doe giue such temper to the edges of weapons, as that one may cut yron with them as if it were but a peece of wood. What shoulde I say any more of this salt, for it passeth my reach to make anie true description of the excellent vertues thereof. Onely I will conclude with this, that if it were possible to keepe the same from moysture, then diuerse subiectes wherein it is included would last for euer, and so the salt that is in Wood, would defende the same from all putrifaction, and if all humiditie might best defended from entring into a peece of Wood, there would neuer any Wormes breed or engender in the same, for it is impossible that anie putrifaction shoulde beginne, vnlesse some moisture be first kindled by way of putrefaction. Thus much out of the first treatise.

Nowe I will take out a few of the most principall notes out of his large discourse vppon the title of Marle, and so proceed from these French Theoricks, to some English practises.

Marle, saith Master Barnard, is commonly a white earth

earth which men digge out from vnder the ground, and for the moſt part they are forced to make pits, in ſuch ſort, as they doe for wels before they can come at it, and where they find any ſtore thereof, they laie the ſame vppon their hungrie and barren groundes, firſt in ſmall heapes, and afterwards they diſperſe the ſame vpon the whole fielde, as is accuſtomed in the common manner of dunging. And this marle will keepe the ground whereon it is laide, ſome 10. or 12 yeares in hart, and in ſome countries for 30. yeares. And ſometimes the vaine thereof, beginneth at the verie entrance of the pit, and ſo runneth down many yardes deepe: and ſometime we are forced to digge eight or ten yardes before we can come to the vaine thereof. But one thinge amongeſt the reſt ſeemeth moſt ſtrange of all other (which I haue heard ſome men maintaine) that it profiteth the ground very litle, the firſt yeare wherein it is laid abroad, and that by reaſon of his exceeding heat, whereby it burneth vppe the ſeede that is then ſowne. But this is eaſilie anſwered, for that in the groundes bordering vppon the woods of Arden, which are verie colde, they vſe lime in ſtead of dung, and thereby they make ỹ earth moſt fruitfull which was barren before, Now if lime (which is nothing elſe but a baked or burnt ſtone within thoſe fierie furnaces, and whoſe moiſture is altogether exhaled, ſo as there remaineth therin nothing elſe, but the terreſtriall parts repleniſhed with a fierie vertue) be found ſo rich a ſoile, I know not why the heat of marle may not much better be endured. But it is verie requiſite to ſpread the ſame vppon the earth before the winter beginn, to the ende that the froſtie weather may the better diſſolue the ſame.

A practicall diſcourſe vpon Marle

There is ſome Marle that is as white as lime, and

Diuers colours of Marle.

other some that is of a gray or russet colour, some of it is blacke, and some is yellowe. The cause of the white marle proceedeth of his long decoction, that which is blacke may haue many causes, whereof the principall is, that there is not any long time past since the matter thereof began to congeale, and this marle is more easie of solution, and peraduenture some putrified wood, or some minerals, haue turned the matter into a blacke colour. And as for the yellow marle, that colour may happen either of some yron mine, or of some mine of Lead, siluer, or Antimonie, and thus you see the reason of the diuersitie of colours that happen to marle.

That Marle is not hote

Marle is no other thing then a kind of clay ground and therefore seeing clay is cold and dry, as it appeareth by the Marcasites, and by wood that is both metalized and petrified in clay groundes, it is manifest that Marle is also cold and drie, and therefore it is not the heat thereof, which bettereth or amendeth barren grounds.

The beginning of Marle with the transumtation thereof

All Marle was earth before it became marle, it is a kinde of clay ground, and chalke it selfe was marle before it became chalke. And that which is more, that which is yet chalke within the Matrix of the earth, wil in time harden into a white stone. And last of all, whersoeuer there bee any stones that be subiect to calcination, they were firste marle before they were stones, for otherwise by their calcination they could not possibly amend any barren grounds.

Marle to be dissolued by frosts.

When Marle hath once begun to passe his decoction, it becommeth so harde, that the raine cannot dissolue it so soon as wee would haue it, but it remayneth in small peeces vpon the ground vndissolued, & hereby it commeth to passe, that it can impart none

of

of his ſtrength vnto the grounde vntill it bee melted and liquified, and for that this cannot be ſuddenly performed as in the firſt yeare, therefore the froſts in ſome reaſonable time after do cauſe a diſſolution thereof, and then it helpeth toward the generation & germination of all ſeeds, that ſhall be preſented vnto it. Alſo chalke and lime, after the froſtes haue taken them, wherby they crumble into powder, do become good marle, and ſerue in ſtead thereof.

How Marle worketh his effects.

Although I would not haue the generatiue vertue of marle attributed to his heat, yet my meaning is not thereby to rob Marle of his heat: but *I* labour to confute the fooliſh opinion of thoſe, which attribute the whole vertue thereof to his heate, I ſay the vvhole both inwarde and outwarde. For it is well knowne, that ſalt is inwardlie hot, and therefore it is accounted an helpe to the act of generation, and alwaies in extreame cold weather, a man ſhal finde ſalt to be as cold as water, or any ſtone. Whervpon we may eaſilie gather, that his heat could actuate nothing, vnleſſe it were firſt ſtirred vp by a counter-heate wherin conſiſteth the ſeminall acte, and therefore wee muſt reaſon more deeplie, and looke to the eſſential cauſe that moueth and worketh herein, and then wee ſhall finde out ſome hidden matter that is not ſubiect to euerie meane conceit.

A fift element and what it is.

And this is a fift element (neuer known before to the auncient Philoſophers) which is a generatiue water, cleer, ſubtile, mingled inſeparably with other waters, which water beeing alſo brought among common waters, doth indurate and congeale it ſelf with ſuch thinges as doo happen to bee mixed with it. And although the common Waters doe mount aloft againe by the attraction of the Sunne, whether that the ſame bee in Clowdes, Exhalations,

or

or vapors, yet neuertheleſſe the ſecond water which I call a fift element is alſo carried amidſt the others, and when thoſe common waters run downewardes, alongſt the vallies, whether they be flouds, riuers, or ſprings, I ſay that in what ſort ſoeuer they deſcende, or in what place ſoeuer they ſtaie, they doo alwaies frame ſome one thing or other, and moſt commonly either great ſtones, rockes and quarries of ſtone, according to the groſeneſſe of the matter which is ſtained with it, and carrieth the forme of his molde wherin it reſteth, and this being ſo congealed, that common water is ſometimes drunke vp in the earth, and deſcendeth lower, or elſe it is drawne vpwardes, and doth vaniſh away in vapors and cloudes, leauing his companion behind, which he is not able to carry any longer, And thus is Marle engendred, for before it was marle, it was a certeine earth, into which both theſe waters had entred, and had repoſed themſelues for a certeine time: during which reſt, the generatiue water became congealed, and the vaporatiue water paſſed away, and was drawne vp from the other, and ſo the earth (wherein this congealed water did ſtaie) waxed hard, and became white by the vertue therof, being both wrought vp into one bodie, whereby it commeth to paſſe, that when this marle is ſcattered abroad, vpon the arable ground, the ſeede which is ſowen thereon, doth not take of the ſubſtance of this marle, to helpe his vegetation, but doth rather glut it ſelfe with this generatiue, and congelatiue water, which I call the fift element, which generatiue water being once conſumed by often ſowing of the ground the marle becommeth vnprofitable, as a ſign of ſome decoction finiſhed, the like is to be thought of all other dung and lime.

It

It is also to be noted, that the seed which is sowne cannot make any attraction of this generatiue water, if the same were not also moistened with the common water. And that when the ground is moistned either with the raine, or deaw that falleth, the common water that descendeth, together with the generatiue, stayeth the hastie congelation of the other, whereby it commeth to passe, that corne and other seedes doe keepe themselues greene vntill their maturitie, and when they are ripe, and that their roote ceaseth to drawe or drinke vp any more thereof, the exhalatiue water flyeth away, and the generatiue remaineth, and as the decoction in plants beginneth to perfect it selfe, so the colour also chaungeth, as it commeth to passe also in stones and al kinds of mettall. So as this fift element, although it be a water, & mingled with other waters, yet it is the same which doth vpholde both strawe and hey, and al kindes of Trees and plants, yea euen men and beastes likewise, & of this generatiue substance, the verie bones both of man and beast, are hardned & framed in their kind. And euen as we see the pibble or flint stones which are formed and engendred of this congelatiue water, doe endure the strength of fire, and are not consumed therewith, but rather vitrified: so in like manner this fift and generatiue element being within ỹ straw and hey cannot bee wasted away, for if thou dooest burne them, or any other Wood in the fire, all the cõmon water thereof will vanish into smoke, but this generatiue water, which hath sustained, nourished & encreased both the straw and hey remaineth in their ashes, and cannot bee consumed, but turneth it selfe into glasse, being liquified in those hot flaming furnaces, and the same so cleere and transparant, as the

The vse of the exhalatiue water.

generatiue water it selfe was before this congelation. But there is nothing that more resisteth fire then the bones of diuers beastes, as I haue often prooued when I haue burned the bones of sheepes feete, and so of egge-shelles, which is a manifest argument, that they haue drawne more abundantlie to themselues, of this generatiue water then any other partes. And there is no doubt but there is great store therof in the apple of the eie, which being continually moistened, and accompanied with the other exhalatiue water, is kept from being hardened into the nature of a stone. Neither is there any kind of stone which in his principall form is not cleere, and white, and those which be clowdie are so by accident, for that in their composition, there happened some earth or sande to bee congealed or hardened with their first matter. Neuertheles, there is no stone so dark & obscure, which by force of fire dooth not become transparent at the last, bicause that principall element whereof I haue spoken so much, maketh all things else become transparent and fyxed, as it is it selfe in his fyrst beeing. This I haue written the rather to encourage thee to seeke out marle within thine owne inheritaunce, to enrich thy barren grounde, that they may yeelde their fruit aboundantlie in their seasons. And in so dooing, thou shalt shewe thy selfe a good husbandman, and become a patterne to all thy slothfull neighbours, whereby they shall bee forced to imitate thy good example.

How Marle was first found out.

Now concerning the fynding out of this marle, I thinke that those which fyrst happened vppon it, did not obteine this skil by any true theoricall imagination, but that by meere chaunce, they did fynde the same without any seeking, as peraduenture by the

digging

digging of some Ditch or other trench, about their ground, and beeing forced to throwe vp that which they had digged vppon the bankes of their arable fyeldes adioyning, and fynding such Corne as happened to be sowne vpon these bankes, to bee more fresh and ranke then in any other part of the fyelde besides, they prosecuted this good happe of theirs further the next yeare, and so spreade the same ouer the whole fyelde: and so by long experience, and in the ende they found the same much more profytable then any other dung, and some others peraduenture might happen vppon the same in seeking for springs, in like manner. Yet it is alwaies to be noted that this marle must fyrst be dissolued throughout the ground before the seed can make any attraction thereof vnto it selfe: euen as flesh cannot purchase a defensatiue against putrefaction by salt, vntill the salt bee melted and made liquid.

How men may search for Marle.

But for the more easie fynding out of this marle, I thinke it necessarie that euerie man shoulde haue a long Auger or Percer, with seuerall large bittes which he may put on and take off at his pleasure, and with these hee may search at what depth hee will, in diuers places of his Lande, alwaies marking what seuerall vaines of earth he fyndeth in the bytte of the Augur, and of euerie seuerall earth which hee draweth vppe, he may make some triall vpon the ground, vnlesse he can be assured by the whitenesse and hardnesse thereof that he hath hit vppon the right Marle: for then he needeth not to proceede to any further Triall.

And hauing once found the vaine, hee may lay it open in such sort as may be most conuenient for the euacuating thereof. Nowe if there happen to bee

any quarrie of soft stone betweene him & the marle: he must firste make his entrance thorough the stone with a piercing worme, and then hauing made waie, he may seeke further with his foresaid Augur.

Colors of Marle.

Marle for the most part is white, yet in diuers parts of Fraunce, there is both gray, blacke, and yellowe, and therefore we must not whollie rest vpon the colours thereof, for these other colours may become white by a longer decoction, and as there is a white marle, so likewise there is a white clay, which I think will serue in steade of marle, especiallie that falling earth, wherewith the fullers vse to scoure out oile out of their cloathes.

A white claie. Fullers earth

That Marle is not of a fatty nature

It is an erronious opinion, to thinke that Marle may be discerned by the feeling of the hands, as some doe holde, and that it is to bee knowne from other moulds by the fattines, or viscousnes therof, which is false, for if it were fatty, it would be impossible eyther for raine or frost, to dissolue the same, for all oylie thinges do resist and striue against water, yea wee see apparantly, that both clay & marle do help to scoure out all greasie and oylie spots, as Fullers can well testifie, and if marle were of an oylie Nature, it woulde consume in the fire, but if we make any proofe therof, we shall finde the same most violently to resist the fyre.

And in the latter end of his Philosophical abstract, Maister *Barnard* concludeth thus, that marle is a naturall, and yet a diuine soile, beeing an enemie to all weedes that spring vppe of themselues, and giueth a generatiue vertue to all Seedes that are sowne vpon the ground by the labour of man, and heere endeth Maister *Barnard*.

A man would thinke that so learned a Theorick as this

this in a matter ſo generall, and neceſſarie for the Realme of Englande, ſo plawſible to worldly wittes, and ſet down in ſo plaine and familiar tearms, could neuer haue beene extant ſo manie yeares together with ſo little fruit, and profite vnto all our leane and barren groundes, as (for ought that I can ſee or heare) it hath beene hitherto, and ſo is like to continue, vnleſſe ſome ſtudious ſcholler, or other, will ſteppe foorth, and take our idle Farmers by the hand, and either leade them ouer ſhooes into one of Maiſter *Barnards* Mucke heapes, or elſe by violence thruſt them into one of his Marle-pittes. For what eaſier courſe can poſſiblie bee directed by the Penne of anie Writer, then is heere deliuered for the finding out of Marle? Or what cheaper toolles coulde the witte of man deuiſe, then an hande, and a piercing Augur to ſearch into the bowels of the earth for all her marrow, and fatneſſe? Doe wee thinke that Nature is bounde to caſt vp the treaſures of her full gorge amongeſt vs, who will not vouchſafe one pipe of *Tabacco* vpon her? *Effodiuntur opes*, ſayeth *Ouid*, vnto all ſlouthfull husbandmen, and therefore ſeeing wee may haue ſuch wealth for the digging, let vs not ſpare the Shouell and Mattocke, till wee haue founde out ſome Marle-pittes in our owne demeſnes. For the veynes of Marle are more in number, much longer and broader, and deeper than wee thinke for, and though wee finde them not in one place, yet wee ſhall happilie finde them in another. It is a ſmall aduenture to hazarde a ſhilling to gaine a pounde: it is no loſſe to ſet poore men on woorke, (which otherwiſe in conſcience wee beeing able, and they beeing honeſt, we are bounde to relieue) though they gaine vs nothing, our great poſſibilitie

Howe to find out Marle and the vſe thereof.

Colors of Marle.

may eaſilie countervaile their ſmall charge. Regarde not the colours of the mould, you ſee that maſter *Barnard* heere telleth you of a white, of a gray, of a blacke, and a yellowe Marle. And whie may there not alſo bee ſome other colours of Marle in our Countrey which Maiſter *Barnard* neuer knew? It is a ſmall matter to trie the ſeuerall natures of all the veynes which you finde in digging, you may proue of euerie kinde a little, in diuerſe places the firſt yeare, and ſo proceede to a greater tryall the next yeare, as your good ſucceſſe ſhall encourage you.

Proportion of Marle.

And though you finde but ſmall amendment in the firſt proofe, yet practize againe; for it may bee you laye on either too little, or too much thereof vpon your ground: for too little of the beſt Marle can doe but little good, and too much thereof hath beene alreadie founde to bee verie hurtfull to the Corne. And therefore vntill you haue attayned vnto the verie pricke of proportion, learne firſt all the experience which you can drawe from other men, and then prooue what further perfection you can adde thereto your ſelfe. Examine the ſeaſons of the yeere,

Seaſon to lay marle abroad.

in which it is beſt to lay abroade euerie kinde of ſoile, for if the ſame bee of an harde and binding nature, then Maiſter *Barnard* telleth you, that it muſte bee layde in the beginning of Winter, that firſt the froſts maie make the ſame to moulder into ſmall peeces, and ſo to become apt for ſolution, and then the raine which commonly dooth fall more aboundantlie in the Winter then in the Sommer time, may perfectlie diſſolue the ſame. If it agree not with one ſort of

Vpon ſeueral grounds

ſoyle, peraduenture it will agree with another. It may

may ſerue an arable grounde, and not a paſture ground, or a fennie, and not an heathie, or a Clay ground, and not a ſandie ground. Peraduenture it may proue good for one kinde of graine, and not for another. And therefore you muſt neuer reſt till you haue made a full tryall of all the inward veynes of the earth, in all the ſeaſons of the yeare, in all degrees of proportion, in all kindes of graine, vpon all ſortes of grounde, with all ſuch like neceſſarie circumſtaunces, and ſo in the ende you ſhall finde out thoſe differences, and make ſuch obſeruations to your ſelfe, as the ſlugguiſh and idle loyterers of our time (though they haue the ſame matter to worke vpon) ſhall neuer bee able to reach vnto, or imitate.

In ſeuerall ſorts of graine. Circumſtances.

Fullers earth.

The Fullers earth which Maſter *Barnard* heere mentioneth in his title of Marle, and commendeth to the ſame ende, I haue not knowne at anie time practiſed in Englande for the bettering of anie ground, but by all preſumption the ſame muſte of neceſſitie bee verie rich, becauſe it is full of that vegetatiue ſalt, ſo highlie commended by this French Authour, which appeareth in thoſe ſcowring effectes, for the which it is diuerſe wayes had in vſe amongſt vs, and if the ſame bee to bee had in anie plentifull maner, I could wiſh that ſome exact proofe were made thereof, according to the former circumſtaunces. And heere I can not omitte the carefull induſtrie of that ingenious, though vnlearned olde man. Who hauing long ſince cutte off that vnprofitable exchaunge of our Engliſh ſiluer, with thoſe French and Leaden trifles: hath alſo giuen himſelfe to diuerſe other profitable and ingenious practiſes, amongſt

amongst the which he hath assured me of this one to be most true, that euen the very clay which he digged vp in Saint Georges fields, beeing laid vppon his pasture grounds which hee there holdeth by lease, did exceedinglie enrich the same, insomuch as hee did neuer regard to seeke after anie other soyle. And this hath also some credite with master *Barnard*, which affirmeth that all Marle is a kinde of Clay grounde, and it should seeme to differ onely in digestion from Marle. And in another place hee setteth downe his opinion of a white Clay, which hee found as hee trauelled in France toward Poicters, and Towers, that he held the same to be equiualent to Marle it self. And it should seeme by all reason, that the like order is to be vsed therein in bestowing it vpon the ground, as is before expressed in Marle.

Clay instead of Marle.

I may not here omit to commend the soyle of the streetes, or residence, and groundes of all Channels, Pondes, Pooles, Riuers, and Ditches, and of all other pannes and bottomes whatsoeuer, where anie store of waters do repose themselues, but especially where any abundaunce of raine water hath a long time setled, for that the congelatiue partes of these waters, bee full of the vegetatiue salt of Nature, as Master *Barnard* noteth, who is verily perswaded that there is no other reason to bee giuen of that heartie fruitfulnesse, which the fallowe groundes doe gather againe in time, but onely the generatiue part of raine water, which dooth fall vpon them so often, whilest they remaine vnsowen with graine. For to imagine that the earth by quietnesse or rest alone, should become fatte againe without the ministring of anie other nourishment or foode vnto it, were as much agaynst all sense and reason, as to thinke that a languishing

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ſhing patiente ſhoulde in tyme recouer his former ſtrength by keeping of his bedde only without taking of any cordiall or reſtoritiue broths for his comfort. Wherefore ſeeing there be ſo many pannes, and receptacles for waters in euery ſhire, in one place, or other, and ſeeing nature alone miniſtreth matter enough for vs to worke on, but wanteth handes onely to bring things together, let vs ſeeke to helpe nature a little with our hands, and ſhe will retourne our labour againe with an exceſſiue vſurie into our boſomes.

Mooriſh earth,

There is alſo a kind of mooriſh earth, which being laid after 20. or 30. loades vpon an acre, will amend, and better your paſture grounds a long time after.

Dung of beaſtes.

I will paſſe ouer all the triuiall vſes of Cow-dung, Horſe dung, folding of ſheepe, Hogs dung, Pigeons dung, and ſuch like, for that they are already knowne, and common in this land with euery Country *Cordon*, yet I thinke it not amiſſe to ſet downe ſome neceſſary obſeruations in them, ſuch as I haue partely drawne from conceipted wits, and partely haue imagined my ſelfe by the contemplation of natures workes. And therfore here I can by no meanes allow of the ordenary manner, in laying abroade of our greate muckheapes, wherein Maiſter *Barnard* telleth vs that the winter raine which falleth vppon them, carieth alſo with it a greate parte of their ſtrength, ſo as the vpper parte of them becommeth very leane, and hungry, and is ſcarſely worth the cariage, and ſpreading abroad. But I knowe that the Farmers of our land will aunſwere me in this point, that it is too coſtly to build barnes, or other couerts for dunghills, but my meaning is not to perſwade them thereto, although peraduenture if wee did erect a fewe ſtreight trees, or ſtrong poles, and make a looſe thatched, or bor-

Muckheaps how to be made.

A couert for a muckheape.

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ded cap to couer it, which might slip vp and down at what heigth we thought good, as they vse in the low Countries to make their barnes, (a patterne whereof standeth to be seene nere vnto S. *Albones* not far from Parkmill, in the backeside of one of my tennaunts howses there) that so the goodnes of the soile would in a few yeares counteruaile the charge of our building) but rather that they woulde place the muckheapes vpon the foote of some hill (making a little square receptacle of bricke in the bottome thereof) whereby all such strength, and substance of the dung, as all the showers of raine that fal, shal carry with the, might with a free discent be conueied into this pit or cesterne, so as the same in conuenient leisure might also with scoopes, and other shouels, be continually returned vpon the muckheapes from time to time as it fell, whereby the greatest parte of that vegetatiue salt, which nowe is lost in euery farmors yarde or backside, might be preserued for the better manuring of the ground.

A receptacle of brick.

Some be also of opinion that it helpeth much to the bettering of our dung, if al the brine and powdred beefe broth which is commonly throwne away, were powred vpon the muckheapes, thereby to multiply their salte. And Maister *Barnabe Googe* will haue all the suddes of his landery conueied thereon, and the muckheapes to be couered with bowes, to the ende that the Sunne may not draw away any parte of the strength thereof. And because we are now entred into the most principall, & generall practise of this land whereby the greatest parte both of our pasture, and arrable grounds are vsually bettered; it shall not bee amisse to sette downe some new, though a very easie course, howe wee may the sooner bringe our dung to

How to rot dung speedily.

putrifaction, and so thereby not onely obtaine such ranke pasture as now we haue by reason of the same soile, but also that we may purchase a much sweeter grasse, or feeding for our cattell, then hitherto wee haue had, for that (as I conceiue) is the speciall fault of the first crop which our ground bringeth forth after it is newly dunged. And this common errour of ours (if I bo not deceiued) is easilie helped, & that only by making, first a lay of dung of a foot in thicknesse, & then a lay of earth vpon the same, and then another lay of dung vpon that earth, and so proceeding in the maner of *Stratum super stratum*, til your muck heape bee as large and high as you woulde haue it.

To haue sweete gras at the firste yeares dunging.

But this practise woulde alwaies bee perfourmed, either vpon the ground which wee meane to enrich, or very neere vnto it, least that which we get in the goodnesse of the grasse, we doo happilie loose in the charge of our labour, and cariage. And heere it shall not be altogether vnprofitable, to let all those Gentlemen and Farmors, who are desirous of some speciall good mould, for some small purposes, to vnderstand, that after they haue disburdened y ground of this great muckheape of theirs, that if they will yet digge a foot and a halfe or two foot vnder the same, that by this meanes they shal obtaine a most fat and rich earth, and very apt for diuers plants, as al our ordinary Gardeners, can sufficiently witnesse.

A rich molde for gardens, & orchards.

Thus much of the soile or dung it selfe, being dispersed in his grosse body. Now a worde or two of those conceited practises, which I promised before. I haue heard som studious practisers very cõfidently affirm, that if you steep your corn in water y space of certein houres (but I could neuer yet finde them all agree in on time: for som limit 12. houres, som 18. & som 36. houres, you may proue them all, and keepe the best)

Of steeping corne in dung water

in water wherein good store of Cowdung hath lyen in imbibition, for certaine daies (which times you must also serch, if you meane to be an exact maister) euery day stirring the same once, or twise together before you lay in your corne, and after this preperation you sowe the same (though in barren grounds) that so you shall purchase a most rich, and plentifull crop with an easie charge. But this kinde of practise I haue heard both maintained, and impugned aswel by reason as by experience, and that by men of good iudgement on both sides, although if I woulde sette downe mine owne experience herein, I must needes confesse I could neuer yet attaine to any truth in this secret, or to make any apparant difference betweene the corne that was husbanded in this maner, & that which grew of it selfe without any such helpe, yet will I not (for the credit of the Reporters) altogether discredit the Inuention, for that peraduenture I mighte faile in the nature of the graine, or in the time of imbibition. And as it should seem great store of those vsuall receipts, which are common in our ordenary bookes of secrets, is drawne from this ground, wherby they labour to alter, and change the smells, tastes, colors, and vertues of many fruits and plants, only by steeping the seeds in such Aromatical waters, as they themselues apropriate for such vses, as they entende them, & therfore they tell vs, that steeping of seeds in the infusion of wormewood, centuary, coloquintida, and such like, will defende them from wormeating, which for the present time I do easily beleue, but how then commeth it to passe, that these seeds do not also bring forth bitter fruite, according to their infusion? and yet it is generally thoughte that the cloue-gilliflower gotte his firste sent from the cloue, which

was conueyed into his slip, but this I holde for an erronious opinion, and to bee as false as it is olde, for neither is there any phylosophicall, and inseparable combining of their two natures, performed in this grosse practise, neither can so small a substance (beeing neither truely prepared, nor exalted before) extend it selfe so infinitely from one slip to another, as we see daily performed, in that sweet and beawtifull flower.

I haue here yet one experience more to set down in this kinde, which (because it was the practise of a spiritual Lord, that died of late, and fell out very happilie, as I haue beene credibly enformed by one of his especiall officers, who with diuers others was an eie witnesse of the same: although it vary not much from the former course,) I wil publish the same vnto al posteritie, vnder such credite, as I my selfe did first receiue it. And therefore, whereas before you steeped your corne in the water, which had sucked out the strength, or salt of the dung, you must nowe mingle your dung, your water, and your corne together, in a great vessell of wood, and you must stirre the same well, with an apte staffe for the purpose, one whole houre at the least: This worke you may begin in the after noone, and toward Euening you must recontinue your first agitation for one halfe houre, or more: then let these substances repose themselues all the night following, and in the morning, or sometime the next day, you must suffer the water to passe away by some tampion, according to the manner of the saltpeter men: & when the liquor is sufficiently dreined, then mingle the corne and dung throughly wel together, and after sow the dung and corne so mixed in a barren and hungry mould, and you shall haue as

rich a crop, as if the ground it selfe had beene dunged before. This experience was made, in an hartlesse peece of ground, which lacked also one tilth, and which no man durst aduenture to sow with any grain and yet my Lord bishop did by this meanes, attaine to a most plentifull wheat harueſt.

A practical discours vpon salt.

Now let vs proceed to the sweeteſt, cheapeſt, and moſte philoſophicall matle of all other, euen that which both *Valetius* and maister *Barnard* haue so closely, and theoricallie handled, as that (notwithstanding the one telleth vs of the exceeding fertillity, that is found in salt waters, by that infinite generation and multiplication of fishes, yea of Venus her selfe, that *Primum mobile*, in the procreation of children, and the other of those pleasant grapes, growing in the salt Marishes of *Xantoigne*) yet neither of them haue left vs any assured meanes, how wee may purchase any store of this salt, whereby wee may make any great vse thereof. So as notwithstanding we are now brought vnto the riuers of life, and to that goodly tree so laden with golden apples, yet here wee are left with *Tantalus* to starue and perish for want of food. Yea maister *Barnard* himselfe, after that hee had so sweetlie seasoned our eares with his brackish philosophy, yet in one place (as if hee had repented himselfe of his too much forwardneſſe, in these his secret discoueries, nay, as if he had the greateſt secret of nature in hand) he telleth vs in plaine termes, that it is not the common salt, but the vegetatiue salt, which he so commendeth. Nay, that which is more, in the examination of the Indges censure, vpon the groundes of condemned persons, wherin they would haue their landes to be sowed with salt, in token of a prepetual barrenneſſe, he faltreth and staggereth, and

can finde no reaſon to maintaine their iudgementes, vnleſſe it were as he ſaith, in reſpect of the nature of ſome countries, where ſalt was an enemie to al ſeeds. Why how now maiſter *Barnard*? Is it poſſible, that you, which could firſt find out the meanes, howe to furniſh vs in al places, with new ſprings of ſweet and delicate waters, where there was neuer any before, that could firſt finde a fift element, which nature had hitherto locked vp in her owne cofers, which coulde teach vs the reaſon of al petrefiyng, vitrifying, & metalizing of earthy bodies, yea which could ſo learned lie ſet downe, the generatiue reaſon of al vegetables, ſhould now be ignorant howe to reconcile earth and ſalt togither: or how to turn a common ſalt into a vegetatiue ſalt? Yet *Valetius* dealeth more plainely with vs (according to that light which hee had receiued) ſaying, that if too much or too little, doe in any one thing make an apparāt difference in ỹ effects, then ſurely of al others, the ſame is moſt eſpecially to be ſeene in ſalt; and ſo he would haue the curſed effects of that ſentence, to proceede from the exceſſiue proportion & quantity of ſalt, that is beſtowed vpon the malefactors grounds. But ſuppoſe that *Valetius* hath not only aimed faire like a gētlemā, but alſo hit the mark, like a a good archer in this point: wher is now this vegetatiue ſalt become, which M. *Barnard* ſo highly extolleth? or how ſhal we obtaine any ſtore thereof, for the enriching of ſo many thouſand acres of barrē groūd, as this realm of England doth preſent vnto vs? Meethinks I am now in the midſt of a ſtop galiard, & were it not, that I ſhould heere offend ſo great a concourſe of people, as I haue nowe gathered together, in mine owne conceit, I coulde finde in my hearte to commaunde the Violands to ceaſe, and ſo to breake off

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in the midst of a rough Cinquepasse. Neuertheles, crauing pardon of all the ancient Philosophers heerin, but especially of M. *Barnard* (who if he had bin disposed, could haue eased me of this labour, & performed it much better) I will onely request with *Sinon*, *Fas mihi Graiorum sacrata resoluere iura*, and so bestow a new taske vpon Nature, who wil be ready to yeeld vs great store of the richest Marle-pittes, and such as haue not hitherto beene discouered, but onelie in physicall rearmes to any Nation, or countrie whatsoeuer: hoping hereby, that as the secret which I haue now in hand, and seemeth almost incredible before it be disclosed, shall procure some further credite & beleefe, vnto the rest of my inuentions, whereof I haue alreadie giuen a taste, by a publique impression, and yet reserue some fewe till I finde a better opinion conceiued of English Artists.

Now then let vs first examine, what essential difference we can finde, in those foure elements, whereof all the inferiour bodies doo consist? or whether they may be all reduced to one, notwithstanding the manifest opposition that seemeth to be in their contrary qualities? And for my part, I must here acknowledge that the best naturall physicke that euer I could learne in this point, was neither out of Aristotles physicks, nor Velcuries naturall philosophy, nor *Garseus* meteors, nor out of any of the olde philosophicall Fathers, that writ so many hundred yeares past: but that little which I haue, I gathered it on the backside of Moore fieldes, where by sundrie vndoubted argumentes, I did heare it maintained, that all those elements, doo onely differ in attenuation, and condensation: so as earth beeing attenuated, becommeth water; and water condensate, becommeth earth;

water

water attenuated becommeth aier, and aier condenſate becommeth water; and ſo likewiſe aier attenuated becommeth fire, and fire condenſate becommeth aier, and thus all of them ſpring from one roote, which being admitted is a manifeſte proofe that there is a greate, and neere affinity betweene the lande, and the ſea, wherein we ſhall finde ſalte water enough for our purppoſe. And yet further wee ſee that of the earth, and water together are made one globe, ſo as a ſmale matter will make them frendes being ſo neerely vnited together. And nowe I may well ſay that I am entred into an whole ſea of matter, from whence I muſte fetch the greateſt ſtore of my vegetatiue ſalte, and if this ſtore-houſe faile me, I knowe not whither to repaire for ſuch plenty of ſalte, as I muſt be forced to vſe in this action. And becauſe you ſhall vnderſtand that I am now in a right courſe, let vs conſider of a fewe experiences already performed in the like kinde; which becauſe at the firſte they were found out by meere chaunce, and not by iudgement, the Authors of them could as yet neuer extend them to any generall, or publique vſe: but haue hitherto walked continually like petite conſtables within their own precincts. Amongſt the which, the firſt practiſe that euer I heard of, was of a ſillie ſwaine whoe paſſing ouer an arme of the ſea with his ſeede corne in a ſacke, by miſchaunce at the landing, his ſacke fell into the water, and ſo his corne being lefte there til the next low water, became ſomewhat brackiſh, yet ſuch was the neceſſity of the man, asthat he (not withſtanding hee was out of all hope to haue any good ſucceſſe thereby, yet not being able to buie any other) beſtowed the ſame wheat vpon his plowed groundes, by the aduiſe of a gentle man of good

worship frō whence I receiued the report thereof, & in fine when the harueſt time came about, he reaped a rich crop of goodly wheat, ſuch as in that yeare not any of his neighbours had the like, & yet notwithſtāding (for ought that euer I could yet learne) neither he nor any other of his countrime would euer aduenture to make any further vſe thereof, belike being perſwaded, vnles that the corne by chaunce fell into the ſea, it would neuer fructifie. What ſhoulde I ſpeake here of him that of his owne mother witte ſowed a buſhell of ſalte long ſince vpon a ſmal patche of barren grounde at Clapham which to this daye remayneth more freſh and greene, and full of ſwarth then all the reſte of the fielde about it? But this man had ſome more reaſon then the other, not to proſecute ſo chargeable a practiſe any further, for that he knew well that one buſhell of ſalte woulde counteruayle two loodes of the beſte dunge there, whereas the former practicer, mighte haue had ſea water at will for the fetching.

Salt ſowed at Clapham

I mighte here adde the dayly, and vſuall practiſe in the Weſt partes of this land, where the people to their greate charge in cariage, doe conuaie the ſaltiſh ſandes, vnto their barren groundes, whereof ſome of them doe lye fiue miles diſtant from the Sea. And yet they finde the ſame exceeding profitable, for that their inheritance is thereby enriched for many years together, and who ſeeth not that the whole ſtrength, and vertue thereof conſiſteth in the ſalteneſſe, for otherwiſe wee mighte happely finde ſome other ſortes of ſand that woulde alſo bee equiualent vnto this. But to ſette downe one experience that may ſerue for a thowſand becauſe it conſiſteth

brackiſh ſandes.

of

of nothing els but ſalte. So that here is no partnerſhip at all, no ace of harts nor fiue fingers to bee ſuſpected.

Before you ſow your ground, do but only mingle two buſhels of bay ſalte, amongeſt foure buſhels of winter graine, and ſo diſperſe them together vppon the ground, and you ſhall finde a good encreaſe of corne and the land it ſelfe muche bettered, and cleered of weedes, as I haue beene very credibly enformed. But of all others I wonder moſte of all at the ordinary experience which hath ſo longe time in the view of ſo many perſons, beene yearely practiſed in the fieldes, neere adioyning to the ſalte pits of Nantwitch, where vpon the fall of any greate ſtore of land waters into their pits, being forced to empty, and drawe out all the freſh water which alwaies floteth vppon the brine, and to beſtow the ſame in ſuch places as are neereſt, and therewith alſo emptying ſome of the brine with the freſh water, they finde in time this earth ſo ſtrongly ſeaſoned with theſe brackiſh waters, that no ſoile or dunge is comparable vnto it, for the manurance of their groundes. And is it poſſible, that ſo many ſharpe, and choiſe wits, ſhoulde till this day neglect ſo rare, ſo rich, yea ſo ineſtimable a triall as this, and not one amongeſt a thouſande that hath ridden from thence to Weſtcheſter, ſhuld haue beene able to haue caried the ſecret ſo farre, but muſt ſo careleſly, and retchleſlye drop the ſame by the way? But to com yet neerer to our purpoſe, what ſhall wee ſaye, or thinke of that ſurrounded leuell at Erith?

The brine of the Saltpits.

Erith breaches.

I dare not report that exceeding fertilitie which I haue herd commended in thoſe two breaches, euen

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by the seuerall farmers thereof: and though we may in some measure excuse our grosse capacities for not applying those visible effects of the brackish waters, which had many years togither, reposed themselues in the greater breach, because the same was but lately inned, yet what shall we say for the lesser breach, which hath bin woon so long since? Was it not sufficient, to haue buried so many thousands of our English pounds, in those Dutch and drunken deuises, about the gaining of the grounde (in the time and charge whereof, some English wits that I coulde name, did offer to make a great and gainefull accurtation, and yet could not be heard) but that wheras nature her selfe presented in those breaches, a full recouerie of those expenses, to such as are studious; that yet we should remaine as blinde as beetles, not once examining, from whence this aboundant fruitfulnesse should spring, or growe? Nowe I finde that saying of the Philosopher, as concerning Nature, to be most true: That she doth offer and discouer her selfe in the most plaine, and vsuall actions, wherein we doo daily busie our selues, and yet scarcely any man doth apprehend her. The sillie country wench, churneth creame into butter with a simple staffe, and in a plaine vessell, onely by stirring vppe the inwarde fire of nature in his owne center, whereby it maketh a true and philosophical diuision of partes, yet whoe is the wiser for it?

But to returne to our salt againe, and to giue some colour to this weake contemplation of ours, peraduenture some men (and those also not of the meanest conceit) who hauing a continual eie vppon the salt marshes, wher euery acre of ground is so little worth, do therefore vtterly condemne the vse of brackish

waters,

waters, as the waſtefull deſtroyers of all generatiue vertue. Indeed I know, and haue found it moſt true, in mine owne experience, that if any vegetable whatſoeuer, haue by miſhap taken any ſalt water, that the ſame is moſt vnapt to bee ſtirred vppe to any true or kindlie workemanſhippe, but the reaſon heereof, I muſt conceale for a time, it ſhall now ſuffice to aunſwer that other obiection, which ſeemeth like a forceable ramme, to beat down al the foundation & building which we haue hitherto made. But this I may ſufficiently refell, by that *Nimium* of *Valetius*, which is daily to be ſeene in thoſe Marſhes, and maketh the graſſe thereof euen brackiſh, to al the cattel that feed thereon, although in the manifeſtation, and whole diſcouery of the ſecret which I haue in hande, the ſame is elſe-where, more fullie and plentifully aunſwered. What is then remaining, ſeeing that the ſalt of Clapham, thoſe Weſterne ſandes, that brine of the Cheſhire ſaltpittes, the reſidence of thoſe brackiſh Waters at Erith, doo offer ſo liuely demonſtration vnto vs of the vndoubted fertilitie, which is ready to ouerflowe our bankes if we wil but onely giue paſſage vnto it: but that wee doo nowe and than ſuffer a voluntary inundation and deluge, by thoſe brackiſh Waters of the Sea, vppon ſome parcel of land, that is adiacent thereunto? which after they haue ſufficiently repoſed themſelues thereon, we may, by conuenient ſluces, returne the ſame againe, and ſo leaue the earth to her owne workemanſhippe, whoe by her inwarde heat and tranſmuting nature will in ſome reaſonable time, by way of putrifaction conuert that, which was before a common ſalt, into a vegetatiue ſalt, ſo as although wee had iuſt cauſe before, to feare the extreame drying, or burning na-

ture of salt, yet now when the same is made familiar, and as it were of one nature with the earth, it becommeth a most enriching substance: but least (whilst I go about to benefit the poore and honest Farmours of the land) I happen by these newe deuises, to hurt and hinder them against my will, and honest purpose; I would wish them firste to consider aduisedlie of the whole discourse, and to read it ouer againe and againe, before they put the same in practise least peraduenture, they take a sword by the point, and so hurt themselues by that weapon, which was giuen them to defend their persons. And let this be a generall caueat vnto them, that they begin with small practises, and first vppon arable grounds, before they proceed to pasture, or meddowe: and so beeing carefull in those former circumstances, which I haue handled at large in the title of Marle, they shall no way endanger their estates, nor hazard any great losse, before they attaine their desires. Neither would I haue them perswaded, that my meaning is that they should ouerflow any groundes, which eyther they haue sowed already, or meane to sow presently with their graine, but rather some waste ground or other, which after it hath beene glutted with salt water diuers times, and then reposed it selfe a sufficient time, might serue in stead of marle, or other dung to spread abroad vpon their barren corne groundes; but how often the same should bee ouerflowne, and in what time the earth will sufficiently purifie and transmute the salt, before it wil bee seruiceable in this kind, I wil not heere determine: yet since the same is so wel performed, neere the salt pits where there is not any artificiall obseruation at al made, I think him to be of a very grosse conceit, who after he hath conferred

ferted with thoſe of Nantwich in this behalfe, ſhould not be able to effect the like, in any parcel of land that bordereth vpon the Sea, or any arme thereof; yet it ſhal not be amiſſe for them to know this difference, that the brine of ſome of thoſe ſaltpits, dooth holde one third, or one fourth part of ſalt, whereas the Sea water dooth not for the moſt part containe aboue one eighteenth or twentith part of ſalt, which would make a great difference betweene them, but that much land water is alſo laded out of thoſe pits among the brine.

And now by this time I hope you are well furniſhed with ſalt, at an eaſie price, as alſo with the meanes howe to make the ſame of a vegetatiue nature. It were but in vaine here to entreat of the nature of that ſalt, whereof the Peter men doo gather a buſhell or two at the moſt, from thirtie tunnes of earth, & therfore howe excellent ſoeuer the ſame be in his kinde, it wil not profite vs much in this worke, becauſe the ſtore thereof is ſo little. Now I wil proceede to ſome other ſorts of ſoile, which be excellent in their kinde, but moſt of them appropriate only to particular places, and ſome of them not to be had in any great quãtity, and therefore fitter for gardens, or for the trial of maiſteries, then for the enriching of arable or paſture grounds, amongſt ỹ which, I wil alot the firſt place to the putrifaction of vegetables, becauſe there may ſome reaſonable ſtore be had of ſome of them, in certaine places, & then to the calcination of them, wher by they are firſt reduced to aſhes, & after thoſe aſhes may be diſperſed on ſuch barren grounds, as ỹ proprietors of them ſhal make beſt choiſe of. And for ought that I could yet imagine, I hold ỹ brakes or fern to be both the cheapeſt, yea moſt plentiful, and that which

may

may beſt be ſpared of all the vnneceſſary weedes that growe, and that you may ſooner rotte, and putrifie them, you muſt mingle good ſtore of earth amongſt them, or elſe make ſeuerall beds, or layes of earth, & ferne one vppon another; till you haue made as it were a large muckheape of them, and ſo let them reſt till they bee wholly conſumed into a fine earthe, or mold. Although I could name a Yorke-ſhire knight who dooth onely beſtowe the ferne it ſelfe in ſome good thickneſſe, throughout all the allies of his hop-garden, whereby both the rootes of his plants, are keept the moiſter, and alſo hee doth yeerely gather a rich molde out of his allies, to amende, and better his hop-hils withall.

How to putrifie ferne ſpeedily.

And here I haue iuſte cauſe offered me to commend alſo the manner of polling of his hops, which hee placeth in ſuch ſorte, as that one plant may not ſhaddow another: but that his whole garden receaueth the fulnes, & ſtrength of the ſun-beams at once, whereby both his hops are more kindly, and the bels of them much larger then in any other hop grounds, whoſe poles, are erected, and ſtand vpright after our ordenary and groſſe manner. But becauſe my promiſe was not, to deliuer any skil at al in hopgardens, I wil reſerue this concluſion, with ſome other ſecrets in hoppe grounds, not yet diſcouered or brought in publike vſe, for ſome apter occaſion, *vt ſemper nouus veniam.*

New māner of poling of hops.

And that I may not ſeeme, to haue loſt my ſelfe, in the midſt of theſe brakes, into the which I am now ſo deepely entred, I would haue that, which is heere ſpoken of the Ferne onely, to bee generallie vnderſtood of al ſortes of plantes, or vegetables whatſoeuer, wherewith the earth dooth ſeeme vnprofitable

char

charged.

Diuers also haue found singular profit in the hayre that is gotten from the hides of beastes being thinly laid vpon the ground, and suffered to putrify. Haire.

Now as we may by putrifaction of the fetne, and other plants, in diuerse partes of this realme make the same very profitable vnto vs for such country purposes as are here intended; so likewise by calcination of them, or burning them to ashes, we shall find the like and selfe same effects, as diuerse shires in England can already testifie in their owne experience; who consume their fetne, stubble, strawe, heath, furres, sedge, beane stalkes, and sometimes the very diworde, and swarth of the ground to ashes: and these according to the store of salt, which their ashes containe, do either for a longer, or a shorter time enrich their barren grounds. Caltinatis of vegetables.

And because that nature may be knowne to bee so cunning an artist, as that she hath not made any thing in vaine, the witte of man hath also founde out some good vse this way, euen of the dusts and tailes of the malt, which are left in malting, for these being also returned vpon the grounds from whence they came do helpe in some measure to harten them again. The proportion of them is about three quarters to an acre of ground, but this secret extendeth only to malting townes, and there also but to a few acres of ground, yet I thought good to insert the same among the rest, as a member of that body, which giueth vnto each substance his generatiue, and fructifying vertue. Malte dust.

I would greatly commende that fine and delicate mould, that is founde in the boddies of olde large and hollow willow trees, that are putrified within, if it were as plentifull to bee had, as it is rich in substance, yet The earth in willow trees.

hapily how ſmall ỹ ſtore thereof be, it ſhal not be loſt for the gathering, after the beſt vſes thereof be found out, & known among ỹ ſtudious practiſers of our age.

And here becauſe of al other places, I wouldebee loth, to leaue the moſt renowned citty of Englande, wherin I was borne, without ſome further & ſweeter helps for her barren groundes, then ſhee hath bin hitherto acquainted withal, and for that I daily do ſee, a moſt rich commodity trampled vnder foot, and contemned of al men, I hold my ſelfe euen bound in conſcience, for my countries good, not to hide the ſame any longer, but rather to publiſh al ſuch profitable vſes therof, as I conceiue my ſelf, or haue learned of others, togither with a ful ſatisfaction of thoſe obiections, which haue bin grounded vpon the long diſcontinuance therof with the Low country men of Flanders, who are generallie accounted the moſt skilful & painful husbandmen of al Europe. The matter which I mean, is the waſt ſope aſhes which our ſope boilers for the moſt part, wil giue for the cariage, and ſom of them alſo doo pay for the cariage when they are conueyed from their houſes: though ſome fewe of them make a ſmal beneſit of theſe aſhes. And here it ſhalbe no ſhame for vs to acknowledg thoſe Flemmings to be our firſt teachers, in the vſe of them: naye, it is rather a great ſhame, that wee cannot bee prouoked to our owne profit, by the example of others, who haue ſo many yeares enriched themſelues therby, and haue of late yeares, to their great loſſe, bin forced to leaue them. As concerning their good opinion, and profitable vſe of them, I think wee need no further argument to maintain it, then the price which they gaue for them to the ſope-boilers, which I haue credibly heard, was 3. s. or ten grotes a lode, beſides ỹ cariage of them into their own countrey.

And

And yet if the infinite extenſion of them, the eaſie charge in beſtowing of them together with their eſpeciall nature, in ſuppreſſing of weedes, be wel weighed and conſidered, wee ſhall finde them to be much cheaper of that price then any common ſoile, or ſtable dung whatſoeuer. For howe cheap ſoeuer our other ſoile bee, yet the tranſpoſing thereof from place to place (if the land lie at any diſtance) doth make it ſo chargeable that the poorer ſorte of farmors in many places of this realme wil ſcarcely aford the cariage therof to their grounds, though they might haue the ſame freely giuen them; whereas two load of theſe aſhes or thereabouts being ſufficient for an acre of arable ground is ſoone beſtowed by the labor of one mã without the help either of cart or horſe. For their maner about Bridges was after they had ſowed the ſame with greine, to ſtrowe theſe aſhes theron with their hands till the grounde did ſeeme to haue gathered a whitiſh garment vppon it, and that was ſufficient for that yeare, and by this practiſe they might ſowe the ground yeately without leauiug it fallow at any time; yea their ground being helped in this manner would yeald them a moſt rich crop of flax, whoſe ſeede of al other doth moſt burne, & pill the ground for ſo ſaith the Poet. *Vrit enim lini ſemen*. It is alſo with good probability to bee coniectured, that theſe ſope aſhes do not only enrich the ground, but do alſo help to deſtroy wormes, weedes, and ruſhes, that doe ſpring vp in moiſt and barren grounds; then let euery wiſe man imagine what may be ſaued thereby in that chargeable weeding of woad. *Qre* if brome or ferne may not be deſtroied by this meanes; and I make no doubt of brome, if the grounde were firſte plowed, and after theſe aſhes ſcattered vpon the ſame.

And because I would not relie wholie vppon the outlandish experience of those ashes, (least otherwise it might happilie be obiected that they are not agreeable with our soile or climate) I haue thought good to prefix in my demonstratiue table, the portraiture of an eare of Summer barlie, beeing drawne truely and sharpely, according to the breadth and length thereof; which together with sundry others of the same proportion (as by diuers eie witnesses of good credite, I can proue and iustifie) did grow this Summer at *Bishops hall*, where I dwell; to the great admiration of the beholders: the stalke whereof together with the eare was measured to bee an ell, and three inches in length, from the ground to the summitie thereof. And this I did in a barren grounde, by the helpe and meanes of those sope ashes, God blessing my labors therein.

I haue also this yeare, found the like successe thereof in pasture ground, by the meanes aforesaid. *Qre.* If that sope ashes will not enrich the ground for woad as that thereby wee may continue our yeerely sowing vpon the ground, without any intermission thereof. *Qre.* Also, if the same be not very profitable to be laid amongest the hop hilles, to make the plantes to flourish and prosper the better. For in Lombardie, they like so well the vse of ashes, as that they esteeme it much aboue any dung, thinking dung not meete to be vsed, for the vnwholsomnesse thereof. This out of maister *Barnabie Googe*, who dooth also affirme in another place of his booke of Husbandrie, that if we will haue the Artichoke to prosper well, wee must dung the same continually with ashes, for that kinde of fruit delighteth therein.

And to make the same out of all question, I knowe

a graue and well experienced Cittizen of London, who hath made often triall of them, and hath founde very good ſucceſſe, by applying them in the Winter time, to the rootes of his owne Artichokes. Now if we will alſo looke into the reaſon hereof, we ſhal find it to be nothing elſe but the ſalt of theſe aſhes, which notwithſtanding al that ſharpe Lee, which the ſope-boilers haue drawne from them, do yet remain much ſtronger, and more ſaltiſh then our beſt aſhes, that haue not as yet beene put to any vſe; and this wil eaſilie appeare in ſome of thoſe other vſes, that followe hereafter. All which being well conſidered, I do hold the ſame better for winter then ſummer corne, and very profitable for al colde and moiſt paſture, & medow grounds, ſo as they be laide vppon them, about the feaſt of all Saintes, that the great ſhowers in the Winter time, may make them of an eaſie ſolution; whereby the graſſe may haue a more ſpeedy attraction of their vegetatiue ſalt vnto it.

Some be of opinion that theſe aſhes be made for the moſt part, of that tree which carrieth a ſmall leaf, like vnto our Oke, and whereof the Danſicke Wainſcot is made. And ſome others doo commend another tree, that ſomewhat reſembleth our Witchen Elmes, of whoſe boughes and branches, beeing burned, they gather theſe aſhes. But it is moſt certaine that they are not the aſhes of any one tree, but of diuers that are conſumed together, as they growe in ſome great wood. Nowe theſe aſhes by a more violent kind of fire, beeing forced to a fuſion, whereby they ca[illegible]e and clode together, are then called by the name of ſope aſhes. But howe then commeth it to paſſe, if there be ſuch ſalt and ſtrength, remaining in theſe waſte aſhes, that our Fleminges (who wil not

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I haue alſo this yeare, found the like ſucceſſe thereof in paſture ground, by the meanes aforeſaid. *Qre*: If that ſope aſhes will not enrich the ground for woad as that thereby wee may continue our yeerely ſowing vpon the ground, without any intermiſſion thereof. *Qre*. Alſo, if the ſame be not very profitable to be laid amongeſt the hop hilles, to make the plantes to flouriſh and proſper the better. For in Lombardie, they like ſo well the vſe of aſhes, as that they eſteeme it much aboue any dung, thinking dung not meete to be vſed, for the vnholſomneſſe thereof. This out of maiſter *Barnabie Googe*, who dooth alſo affirme in another place of his booke of Husbandrie, that if we will haue the Artichoke to proſper well, wee muſt dung the ſame continually with aſhes, for that kinde of fruit delighteth therein.

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lose so much as the parings of their nayles, much les the vse of so rich a commodity) should wholy abandon them, and for so many yeares togeather discontinew all their traffike and barganing with our sope boilers? It should seeme by all likelyhood that though for a few of the first yeares they found some harthing therby vnto the soile and ground whereon they were bestowed, yet in processe of yeares that these ashes being yearely renewed vpon the same land, did in the ende leaue some hard and barren cruft, or *caput mortuum* behinde them, whereby the ground becam either for a long time, or wholy vnprofitale euer after.

These obiections being throughly answered, and confuted, I hope I shall finde an easy sute of it to entreat all our London borderers, who doe occupy themselues in the affaires of husbandry, to step into the dutch mens romes, and to neglecte no longer so rich and so bountifull an offer. Neither yet will I here relie vppon those late troubles, and turmoiles of the low countries, which hath beene a meanes both to cut off a great parte of the entercourse betwene them and vs, and to make them almoste vnwilling to performe any proffitable practise for their owne good leaft the enemy should like a drone Bee deuoure their hony, nor yet vpon any newe exaction that hath ben demanded of them vppon the transporting thereof, whereas in times past they did easy them freely away for balliſt, but I will only at this time vrge that countermanding priuiledge firste granted vpon a color or pretence to haue imploied them very profitablely vpon the making of salte peeter, and brimstone within this realme, whereby al the sope boilers were prohibited from the sale of them to any such as would transport the, although the patentees could neuer as yet

with

with all their chimicall skill, draw out or seperate one pound of peter, or brimstone from them. And for my parte I am vndoubtedly perswaded that their first purpose was no other (howsoeuer the same was masked, or disguised in shew) but only to force the sope-boilers (after they had procured a generall restrainte) to growe to composition with them for setting them at large again, which appeared most manifestly to be so, for that in vend they demanded a certaine rate vpon the tun, which they denied, and therupon the first discontinuance of them grewe betwixt the flemings and the Sope boilers. And thus I hope I haue remoued this stumbling blocke out of my countrimens way whereby they may beginne a freshe practise of them, and thereby make some vse of that patent, which hath by this time gotten a sownd sleepe, and is now awaked in a good houre.

And as concerning any bad accidente that they should in time leaue behinde them; their melting and soluble nature, whereby in one yeares space they are wholy consumed with those showers, and frosts that ouer take them, is a sufficient argument to conuince all doubtes that can possibly bee obiected this way. But now to some other vses of them: I do find them much better and cheaper then the masons dust for the scowring of our trenchers, and other wodden vessels, and this can our duche liskins, and kitchin maides well approue, whose dressors, shelues, and molding bordes are muche whiter and cleaner keept, then those which are washed, and scalded after the english manner; vppon which reason they must of necessity be very seruiceable for washing of al our wodden floores either of deale, or elme to clense them of all their grease, spots, or soile whatsoeuer

and

and I make no question but that we shall finde them very excellent for the scowring, and clensing of our glasse windowes from all the fleines, filth, and clowdinesse, that maketh them in time so darke some vnto vs. I will passe ouer the vse of them in the paling of the streetes, and laying of bowling allies, wherin also many hundred loades are yearely consumed in London, and the suburbs rounde about it. But I may not omitte that excellent and ingenious practise, of that skilfull and auncient sopeboyler, who looking aduisedly into their binding and knitting nature, hath to his greate credit erected a faire, a strong and costly building of bricke, in the morter whereof, he bestowed good store of his owne sopeashes, which to this day contineweth firme, and solid, and without any shew of ill accident (happning by these ashes) as any other building, whose stones were laide only with lime, and sand. By whose good example many other also of latter times haue occupied many hundredloads of them for the same purpose, & would haue spent many thousand loades of them ere this day, but that they finde this morter somewhat rough in the laying, and more sharpe and fretfull to their fingers then their vsuall morter which they daily occupy. But if I were able to be a builder my selfe, I woulde soone remedy these two slender falts, whereof the latter I holde rather for an excellent quality, and most appropriate for the nature of morter it selfe, rather then a falte. And yet for the good will which I beare vnto all the excellent vniforme builders of our time, and because thereby I shall giue some encrease of labour to the poore, and paines full people, that may bee employed therin, I will set downe the beste aduise, that I can in this behalfe, the same being such as I dare make warrant

warrantise thereof vppon my credit, being carefully handled. As concerning the roughnes of them, who is so blind that seeth not which way to remedy y same, for it is rather a worke of labor then of skill? For they being either grou̇d or stamped into a fine powder, before they be mixed with the sand, will soon be brought into a smooth temper.

And here wee haue no needs to feare the charge that will arise thereby, for I dare vndertake that the profit of one daies labour, will answere the charge of three mens wages, in the difference of price that will be found betweene one loade of these ashes, and one hundred of lime. The sharpnes wherwith they offend the Bricklaiers fingers may in some sort bee auoided by wearing of gloues (without the which, they seldome lay any bricke at all) to auoide the like effects, which they finde in lyme. But for an assured helpe therein (if the same be such as cannot bee endured of workemen) let these waste ashes bee reimbibed with more water for some reasonable time, till some farther part or proportion of their salt be deuided from them and then without all question they shall finde them gentle enough, and much of their fretting nature taken from them. See the whole arte of making of the mortar set downe in the former book of experiments nu. 92. The laste, though not the least vse of these ashes, which I purpose to discouer at this time, is to make them seruiceable in steade of common ashes, both for the whiting of linnen, as also for the making of buck lee, which are nowe growne to an excessiue price, partly by the greate expence of them in salt peter works: but principally through our late sparing of wood and charcoale, whereby these latter times doe not afford the like store, or plenty of them as we were

For buck cloathes.

accustomed to haue in the daies of our predecessors. And I rather induced to conceaue well of them in this course, by that auncient, and common experience, which the whitsters, and dutch laundresses haue long since begun, and doe as yet continew amongest vs, for the speedier whiting of yarne with them, which they do most confidently affirme to become more white by this meanes by once bucking of it, then by sundry times with our common and ordinary ashes, and if they shalbe found ouer strong, & sharpe for our linnen (which is the only falte that I could euer here them charged withall) I doubte not but that by the aforesaid manner of imbibition, they may be so weakned, as they shall easily be reduced to the perfect strength of our ordenary ashes, or else for our better satisfaction herein wee may vse such proportion of our ashes amongst them, as may best bring them to bee of one nature and qualitie with them. Thus much by way of digression of the seuerall vses of these waste ashes, wherein though I haue strayed a little without the bondes and limits of husbandry yet I hope I shalbe found sufficiently within my text, for that all these particular vses may seeme to maintaine and fortifie their fructifying nature the more, because they are wholly drawn from that vegetatiue salt, wher with the same aboue all other ordinary dung whatsoeuer is most fruitfull, and abounding.

Salt of Animals.

Salt of Minerals.

Thus much of vegetables, nowe a touch of Animals, and so I will knit vp this discourse, leauing those inestimable and hidden treasures of the mingrals and their salts, tending also this way vnto the deepe Lullists, and trew english Paracelsians, who no doubt if they liued in thankefull times, woulde begin where I haue left, and not only haue published their philoso-

phicall salt, which nature shoulde haue bene forced to maintaine for euer, but woulde also haue laide open a verie large veine of golden Marle, whereby they woulde haue so multiplied that radicall moisture of sundry plantes, as that in some good measure they should haue recouered that first perfection, wherein they were created, and which they lost by the fall and disobedience of man. I am credibly informed (and the reason thereof is so apparant, as that none bubble which will deny the conclusion of a Syllogisme can denie the same) that after such time as the coast men haue by expression and other apt meanes, gotten that kind of traine oyle, which they call a pilchard oyle, from the fish of that name, that they do also bestow that which remaineth of the pilchardes vpon their leane and hungry grounds, the substance whereof, by putrifaction, doosh in time become a most rich and fruitfull molde, and such as giueth hart vnto ỹ earth, for many yeares together.

Pilchards putrified.

And it is no way to be doubted, but that the carcases and garbage of al other fish, would produce the like effects, for that they must of force resemble the nature of the place wherin they breed and liue: wherof we should haue had a sufficient triall ear this, but that there is no such store of any other fishe so fitlie presented vnto vs for this purpose, as the pilcharde, which serueth to no other vse, after separation made of the oile, but only to engender this fat thing, which we haue in hand.

Garbage of fish.

Now concerning the bloud, offal, and entrailes of beasts, euery Butcher about London, who for the most part, hath a garden for that purpose, to burie the same in, to auoid offence, can sufficiently testifie. And I haue heard the bloud of beasts commended in high

Bloud, offal & entrailes of beastes.

high tearmed, for the forwarding and prospering of all poore and backward vines, so as withall it be tempered with lime, which is vsed to no other ende, but onely to destroy all such wormes, as otherwise the bloud would engender in the earth, which would in time consume all the sap and marrowe, that lyeth in the rootes, and in the end destroy both the root and the vine. Yet this caution I will giue before I conclude: that he which tempereth lime with ỳ bloud, must suffer the first accidentall heate, which happeneth in the slaking thereof, to passe ouer, before hee apply the same to the root, either of the vine, or of any other plant, least that vnkindly and vnnatural heat, (which for the time is stirred vp in the composition) do happen to burne and drie vppe, that radicall moysture, which will hardly be restored againe, by any outwarde Art or meanes whatsoeuer.

Claudite iam riuos pueri, sat prata biberunt.

Here endeth the booke of *Husbandry*.

Diuers Chimicall *Concluſions concerning* the Art of Diſtillation.

With many rare practiſes *and vſes thereof, according* to the Authors own experience.

Faithfully and familiarly ſet *downe by H. Plat of Lin*colnes Inne Gent.

LONDON
Printed by Peter Short.

1594.

Diuerse chimicall conclusions concerning the Art of Distillation.

The maner of drawing, or extracting of the oiles out of hearbes, or spices with all necessarie circumstances.

1 A Copper body, or brasse pot, with a pewter Limbecke, and a glasse receyuer, are all the necessarie Instruments for the extracting of these oiles, and the greater the potte, or bodie is, and the more you distil at once, you shal make both the lesse waste, and the oyles will be in lesse daunger of adustion.

2 Let the middle pipe of your Limbecke, through which your oyle and water ascendeth, be as large againe as the ordinarie pipes are, and much shorter, and let the bucket, or cooler in the head containe as much more colde water, as our ordinarie Limbecks doe.

3 If you haue cause to draw much oyle at once of one sorte or kinde, then vse the first water againe for the *vehiculum* in your second drawing, because the same hath alreadie receyued his glutte of the oyles, and will not be so hungrie to deuoure your oile as new, and fresh water, that hath not beene vsed to the same purpose before.

4 The water in the cooler may not boile, but you must change the same so often as it groweth scalding hot, and put cold water in the place thereof.

5 You may begin your distillation with a prettie strong fire till the oyle beginneth to ascend, but after-

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Diuerse chimicall conclusions concerning the Art of Distillation.

The maner of drawing, or extracting of the oiles out of hearbes, or spices with all necessarie circumstances.

1 A Copper body, or brasse pot, with a pewter Limbecke, and a glasse receyuer, are all the necessarie Instruments for the extracting of these oiles, and the greater the potte, or bodie is, and the more you distil at once, you shal make both the lesse waste, and the oyles will be in lesse daunger of adustion.

2 Let the middle pipe of your Limbecke, through which your oyle and water ascendeth, be as large againe as the ordinarie pipes are, and much shorter, and let the bucket, or cooler in the head containe as much more colde water, as our ordinarie Limbecks doe.

3 If you haue cause to draw much oyle at once of one sorte or kinde, then vse the first water againe for the *vehiculum* in your second drawing, because the same hath alreadie receyued his glutte of the oyles, and will not be so hungrie to deuoure your oile as new, and fresh water, that hath not beene vsed to the same purpose before.

4 The water in the cooler may not boile, but you must change the same so often as it groweth scalding hot, and put cold water in the place thereof.

5 You may begin your distillation with a prettie strong fire till the oyle beginneth to ascend, but afterward

ward let your fire bee so temperate, as that your pipe that runneth into the receauer doe neuer blowe, but only drop apace, or run trickling down the receiuer.

6 Some vse to macerate, or infuse these spices the night before they distill, luting the Limbeck, to their brasse pot, or copper body, the best vse thereof is in my conceipt that the past, or lute wilbe so much the drier befor they begin to worke, but I thinke they gaine not any more oile by that practise. And yet a Neopolitan promiseth to double the oile of Annis-seeds, by macerating them ten daies before distillation.

7 The flowers of sage, thime, rosemary, lauender, &c. yeeld more oile then the leaues, and the seedes more then the flowers.

8 To euery pound of seeds, or spice, adde a gallon of faire water at the least.

9 Beate your seedes and spice somewhat grosely before you put them into your pot, or body.

10 All such hearbs whereof you meane to draw any oile, would be laide abroad in the aire to dry, fiue or sixe daies before you draw any oile from them: for so you may distill both more at once, and also you shal haue more store of oile.

11 Those herbs which are hot either in smell or tast, wil giue their oile in this manner in more plenty then those which are of a mild, or gentle smell, or taste: as the sweete marierom, rose, &c.

12 Moste of your oiles will fleete on the top of your water, yet the oile of cinamon and cloues will fall to the bottom, in the manner of a *Balsamum*, and some do hold it for one trew marke of a naturall *Balsamum*, if being powred into another oile, it sincke to the bottome.

13 Your paſte muſte conſiſt of beane flower, or other courſe flower, tempered with water only, or ſome whites of eggs well beaten, and during your diſtillation you muſt haue ſome paſte ready to ſtop all ſuch breathing places in the ioint, whereat any wind ſhall iſſue.

14. Let your receiuer being of Heſſon glaſſe containe two gallons, or three pottels, and for your receiuers you may choſe thoſe glaſſes which they call bodies, when they are once cut off with hot irons & fitted to their helmes.

15 For the moſt parte you ſhall haue all the oiles of your hearbs, or ſpices to aſcend with the firſte pottle of water, neuertheleſſe for the more ſuerty you may draw of a gallon, and proue what you can gather out of the laſt pottle.

16 You may diuide your oiles from your water, by putting the water, and oiles being temperately warm either into a large head that hath a ſhorte pipe, or for want thereof, into a greate glaſſe fonnell, ſtaying your finger at the bottome of the pipe till all the oile do flote aboue the water (except in cloues, and cinamon) and then letting the water to haue a gentle paſſage by lifting vp your finger a little, vntill you ſee the oile ready to runne out with the reſt, which you ſhall eaſily perceaue by the difference of their colors, and then ſtop the hole with your finger againe, and receaue the oile into a ſeuerall glaſſe by it ſelfe.

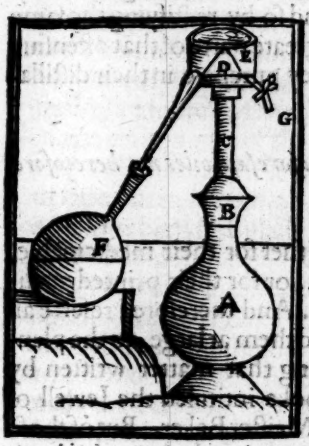
17 When you haue diuided the oyles from the waters, then may you rectifie, or purifie them in this manner. Put all your oyle that is of one ſorte into a glaſſe body, and holde the ſame carefully in ſome hotte water, mouing the ſame

vp and down at the firſt, leaſt you breake your glaſſe, vntill all the water be euaporated, and that you perceyue the oyles to become of a cleare and tranſparent colour, and then keepe them in apt Glaſſes. Moſt of all theſe Oyles will laſt exceeding long, and to ſay trulie, I knowe not howe long, for I haue not found anie of them to faile, or looſe their grace, except the Oyle of Annys ſeedes. But ſome in ſteade of clarifying in the manner aforeſayd, doe vſe to rediſtill the ſame againe in ſmall bodies, and heades of Glaſſe with ſome of the firſt water, and ſome drawe them from Roſe water. Note that in this rectifying by aſcenſion you ſhall looſe a great part of their tincture, and if I bee not deceyued, a greate parte alſo of their ſtrength and vertue.

18 If you haue cauſe to drawe manie Oyles one after another, hauing but one Limbecke for them all, let the Oile of Annys ſeedes bee one of the laſt which you drawe, becauſe it will ſeaſon the Limbecke ſo ſtrongly, that you ſhall hardly get out the ſent but with great labour. And for the ſweetning of your Limbecke vppon euerie chaunge of ſtrong Oyle, you maie ſet the Limbecke looſe vppon the pot of water, or Copper bodie, and ſo vrge vp with fire a great quantitie of water out of your pot, till you find the ſent of the laſt oyle to vaniſhe: or elſe put ſome drie Roſe leaues, or ſweete Marierom leaues into your water, and then make fire, as before.

19 Let the paſſage of your water that ſtandeth ſtill in the cooler, bee verie large, whether it bee by cocke, or Tampion. Some doe emptie their cooler with a long crooked pipe, and ſet the ſame on running by drawing the water downe with their breath

breath a little at the firſt. It is verie requiſite to haue veſſels of colde water readie at hand to poure in preſently vppon the emptying of your cooler, or bucket, and if the ſame veſſels be of equall content with the bucket, you ſhall finde your labour the eaſier. I knowe ſome that to auoide the continuall labour of filling, and emptying of their cooler haue placed a large veſſell full of colde water in ſuch manner as that the ſame by turning of a cocke may runne dropping continuallie into the cooler: and in like manner the cocke that is fixed to the cooler may deliuer as much water into an other veſſell as it receyued from the vppermoſt.



20 Some holde opinion that the beſt drawing of all vegetable Oyles, that will congeale in cold weather, is in the Summer, or Springtime, but a woorkeman will both drawe them, and diuide the at all times of the yeare.

21 Let there bee alwayes one thirde of your potte, or copper bodie emptie, that there may bee ſufficient roome for the ſpirits to play in.

Howe

How to rectifie the aforesaid oyles.

WHen you haue gathered some store of oyle together, put the same into a small glasse body, or cucurbite, setting the same in a gentle balneo til al the water bee euaporated from the oile, and that the oile become of a most cleere and bright color. This manner of rectifying is vsed in the extracted oiles of spices, seedes, and flowers. But if you woulde rectifie either oile of amber, iet, waxe, or any of those heauy, and fatty oiles which muste bee vrged vppe with a strong fire, then your beste way is to poure the oile vpon a good quantity of rose water, in a glasse body luting a helme vnto it, and so by rectifying the same often from rose water, a greate parte of that offensiue and adust smell which they purchase in their distillation, will be taken away.

Diuerse speciall vses of the aforesaid oiles not heretofore published.

TO commend them either for their medicinable, and knowne vertues, or for their printed qualities were but loste labor. And therefore I referre all such as be desirous to read them at large, to the plentifull discourse concerning that matter written by doctor *Gesnerus*, in a booke intituled the Iewell of health, and englished by Maister Baker. But of those other more rare, and conceipted vses, which either I haue founde out by mine owne experience, or learned of others; I will here giue some taste vnto all the true louers of learning. And those

who

who are desirous to make a triall of these practizes may repaire to Maister Kemish, that auncient and expert Chimist dwelling neere the glasshouse, at whose handes they may buy any of the aforesaid oiles in a most reasonable manner.

1. Diuerse sorts of sweete, or hand waters made sodainely, or extempore with the saide oiles.

FIrste you shall vnderstande that whensoeuer you draw any of the aforesaid oiles of cinamon, cloues, mace, nutmegs, or such like, that you shall haue alsoa pottle, or a gallon, more or lesse, according to the quantitie which you drawe, of excellent sweete washing water for your table, yea some do keepe the same for their broths wherein otherwise they should vse some of the same kinde of spice; but if you take three, or foure droppes only of the oile of cloues, mace, or nutmegs, (for cinamon oyle is too costly to spend this way) and mingle the same with a pint of faire water, making agitation of them together a pretty while, in a glasse hauing a narrowe mouth, till they haue in some measure incorporated themselues together, you shal finde a very pleasing and delightfull water thereof to washe with, and so you may alwaies furnish your selfe of sweete water of seuerall kindes, before such time as your gests shalbe ready to sit downe. I speake not here of the oile of spike which will extende very farre this way, both because euery man liketh not so strong a sent, and for that the same is elsewhere already commended by another Author. Yet this I must needs acknowledge to be the cheaper way, for that I assure my selfe there may be fiue, or sixe gallons of sweet water made with

one ounce of the oile which you may buy ordinarily for a groat at the most.

This way you may also make an excellent sweete water for a casting bottle. Take three drams of oile of spike. 1 dram of oile of Thime. 1 dram of oile of Lemons. 1 dram of oile of Cloues; then take 1 graine of Ciuet, and 3 graines of the aforesaid composition wel wrought togeather. Temper them well in a siluer spoone with your finger, then put the same into a siluer boule, washing it out by little, and little, into the boule with a little rose water at once, till all the oyle be washed out of the spoone into the boule, and then do the like by washing the same out of the boule with a little rose water at once til all the sent be gotten out, putting the rose water still in a glasse when you haue tempered the same in the boule sufficiently. A pint of rose water will be sufficient to mingle with the said proportion, and if you finde the same not strong enough of the ciuet, the you may to euery pint put 1 grain, and an halfe, or 2 grains of ciuet, to the weight of 3 graines of the aforesaid composition of oiles. If you distil bruised cloues with faire water only, in an ordinary leaden still, you shall receiue very good washing water for your table, and the charge thereof will not exceed 3 pence, or 4 pence the pint. All these seueral sweete waters I haue often prooued.

2 *How to make sundry sorts of most dainty butter with the saide oiles.*

IN the moneth of May it is very vsuall with vs to eat some of the smallest, and youngest sage leaues with butter in a morning, and I thinke the common vse thereof doth sufficiently commende the same to be whol-

wholsome, in steade whereof all those which delighte in this hearbe may cause a few droppes of the oile of sage to be well wrought, or tempered with the butter when it is new taken out of the cherne, vntil they find the same strong enough in taste to their owne liking; and this way I accoumpt much more wholesome then the first, wherin you shall finde a far more liuely and penetratiue tast then can be presently had out of the greene herbe.

This laste Sommer I did entertaine diuers of my frends with this kinde of butter amongst other country dishes, as also with cinnamon, mace, and cloue butter (which are all made in one selfe same manner) and I knew not whether I did more please them with this new found dish, or offend them by denying the secret vnto them, who thought it very strange to find the naturall tast of herbs, and spices cõueied into butter without any apparant touch of color. But I hope I haue at this time satisfied their longings. *Qre*, if by som meanes or other you may not giue a tincture to your creame before you chearne it, either with rosecleaues, cowslep leaues, violet or marigold leaues, &c. and thereby chaunge the color of your butter. And it may be if you wash your butter throughly wel with rose water before you dish it, and worke vp some fine sugar in it, that the Country people will go neere to robbe all Cocknies of their breakfasts, vnlesse the dairie be well looked vnto. If you wouldе keepe butter sweete, and fresh a long time to make sops, broth or cawdell, or to butter any kinde of fishe withall in a better sorte then I haue seene in the beste houses where I haue come, then dissolue your butter in a cleane glased, or siluer vessell & in a pan, or kettle of water with a slow and gentle fire, and powre the same

so dissolued, into a bason that hath some faire Water therein, and when it is cold, take away the foote, not suffering any of the curds, or whey to remaine in the bottome: and if you regard not the charge thereof, you may either the first or second time, dissolue your Butter in Rosewater as before, working them wel together, and so Clarifie it, and this butter so clarified, wil be as sweete in tast, as the Marrow of any beast, by reason of the great impuritie that is removed in this manner of handeling: for I thinke that if you clarifie it thrughly wel, you shal find either a fourth, or fift part of drosse, in the best butter that you can buy in the market, which I thinke to be more fit for the dunghill, then for a mans stomach, onely it helpeth the butter wiues to make som waight: as though (simple wenches) they knew not which way to helpe themselues in their small dishes. *Qu.* What butter the creame of Goates milke would make, because the milke is exceeding sweet, and nourishing. You may easily knowe what countrey man I am, by following this London text so farre as I doo: neuertheleſſe, let me teach one thing more, to them which knowe it not already, and so I will conclude with butter. That in Winter time, it is very requisit to scalde your milk presently as it commeth from the Cow, before you put it into your pannes, but take heed it seeth not, and you shall haue very good butter, curdes and cheese, when others shal want the same. And thus I hope, I haue giuen some content to those Gentlewomen, which do not thinke themselues too olde, or too wise to learne: and if there be any that can say more in the circumstances of butter, I hope their dairies be greater than mine, that neuer kept but two kine, in any one Summer.

3. *To make any cheese to taste of your aforesaid oiles.*

AS before in butter, so likewise if you mingle any of the aforesaid oiles in your curdes, before you presse out the whey, you shall feele the same very sensible and pleasantly, in the taste of your cheese, in the which you may easily mingle fom rose leaues, or giue them the taste, smell and colour of any flower at your pleasure. There is also a tricke in the making of a cheese, without putting the same into any presse, only by gluing the same a gentle peize, whereby y whey shall runne from the curdes, will bee as thin as water, and carry no substance with it, and so your cheese will bee much bigger, and better than otherwise it would bee, being made after the common country fashion. I haue beene as bold as I dare, in discouering hereof, because I would be loth to offend a Gentlewoman that presumeth of a great secret herein, and she is the more daintie of her skil, because shee hath found it out by many labors and losses of her owne. But I thinke I haue giuen light sufficient to a good dairie Woman to find out al the circumstances therein me[n]ce.

4. *Whole some and comfortable Manus Christi, for fowle vsage in cake or otherwise.*

DIssolue some of the whitest Barbary sugar you can get, with a little rose water in a small shallowe platin, that containeth 3 or 4 ounces, glased within, with bruising a small lip, boile the same vpon a soft fire, stirring it continually, (as they terme it) till a

drop thereof being powred out of the lip vpon a cold ſtone, become hard, and not clammy when it is cold. And when you haue your ſugar boiled to this heigth, then hauing a cleane Marble ſtone, firſt ſprinkeled ouer with fine flower, poure the ſame out by peece-meale, making each of them of the bignes of a groat or teſtor, or thereabouts, and when they are thorow cold, hauing a few droppes of the oyle of Cynamon, Cloues, mace, nutmegs, &c. in a ſiluer ſpoone, with a ſmall feather, giue each of the *Manus Chriſti* a touch onely with a little oyle, on the tippe of the feather, and ſo you may prepare a great many together of them with ſuch oyles as the phyſician ſhall giue direction, and in the eating of them, you ſhall finde them to warme and comfort your ſtomach exceedingly. Some do put in their oyles in the boyling of the Sirrop, but I holde the firſt to be the better way, both becauſe you may make of ſeuerall ſorts at once, and alſo for that thoſe oyles being ouer heated do loſe a great part of their grace in taſt.

Diuers excellent kindes of bottle Ale to be made with the aforeſaid oyles.

I Cannot remember that euer I did drinke the like ſage ale at any time, as that which is made by mingling two or three droppes of good oyle of ſage, with a quart of Ale, the ſame being well brewed out of one pot into another. And this waie a whole ſtande of ſage Ale is ſpeedily made. The like is to be done with the oyle of mace, or nutmegs. But if you will make a tight Goſſips Cuppe that ſhall farre exceede all the Ale that euer mother Bunch made in her life time, then in the bottleing vppe of your beſt Ale

tunne halfe a pinte of white ypocrasse, that is newlie made, after the best receipt, and with good spice, with a pottle of ale, stoppe your bottle close, and drinke it when it is stale. I feare some Alewiues, if they had knowne this receipt, primarily to themselues would haue hung out holly bushes at their red lettises and so they might haue been mistaken for Tauerns, of many Ale knights. Some commend the hanging of a rosted Orenge prickt full of Cloues, in the vessell of Ale, till you find the tast thereof sufficiently mended to your owne liking.

6. Wormewood wine made very speedily, and in great quantitie.

TAke small Rochell, or Connacke wine, put a few drops of the extracted oyle of wormewood therein, brew it (as before is set downe in bottle ale) out of one pot into another, and you shall haue a more neat and wholsome wine for your bodie, then that Wine which is sold at the Stillyard for right Wormewood wine. And as for their Rhenish wine, I haue heard them speake it, whom I dare beleeue, that how many fats soeuer be found at once in some of their cellers, there is none worth the tasting, but that onelie which is abroach, and this is a prettie sleight to deceaue the Purueyor. It may be y^the rest of the fats, haue not yet receiued either the brimstone match, or the compounded ^ent which they poure in with it, or the herbe *Solstitium*, which I haue heard greatly commended y^way, but how so euer they so mistificate this wine, I am verily perswaded, by that little acquaintãce which I haue had with the grapie God, that for the moste part, these Dutch Brewers, buy no other Wines but

Rochel

Rochel, or Gennish, after 3 4 or 6 pounds the tun, and with some fine or six shillings charge vpon a fat, they draw it againe foorth with wine, which is the time I will not touch how the selling of new perry in steed of Rhenish wine may be vsed, or both together in equall proportion, because I feare I shall alredie vexed the vintners, who finde more profit in their secret gaines, then pleasure in these open discouerties.

7 *How to sweeten the oyle of Almonds with the aforesaid oiles, so as the same may serue the perfumer in stead of the oile of Beman, which is made of the Italian nuts.*

CHoose the newest, and sweetest Almondes, that you can get (you shall know them by their reddish colours, and I hold the Barbary Almond, far better then the Iordan almond for this purpose) expresse their oile according to the manner hereafter set down, without warming either the Almondes, or the brasen box wherein you put them, least they become rancke in a short time, after you haue drawne some quantitie hereof, let it settle foure or fiue daies, till all the *Feces* or grounds fall to the bottome, then by declination poure away the cleerest, and take a little thereof, and mingle a few drops of the oyle of cloues therewith, stirring them wel together in an apothecaries glasse, then poure more of the oile of Almonds thereto, working as before, in couraging so much of the oile of cloues therewith, till the sent thereof like you. With this oyle thus prepared, the Perfumer may temper his muske, Ciuet, or Ambergreece, as he doth with his oile of Beman, which serueth for no other purpose, but

but onely to conuey ſuch ſents, and perfumes into the leather as hee hath wrought together for the ſelfe ſame purpoſe, being it ſelfe of no ſent at all. This I write not vpon bare imagination, but vppon ſome proofe which I haue ſeene made with the ſimple oile of Almonds in gloues of no ſmall price. Although I know this oile to be greatly doubted of by the perfumers, becauſe in a few moneths it will grow ſomewhat rancke, whereas the fait is in the olde Almonds which the Apothecaries doe chiefly chooſe becauſe they are more oily then thoſe which are newe, and freſh.

And here if a man were diſpoſed (*Seria miſcere iocis*) were a fitte opportunity to diſcourſe of a philoſophicall contrition of oiles, thereby to defende them from putrifaction. Alſo if you labour, and beate well together ſome freſh oile of Almonds with chaunge of roſe water, it will ſerue inſtead of a ſweet ointment, or *Pomatum*, to annoint your hands with. So likewiſe of the oyle of cloues, tempered with the oyle of Almonds to rubbe a new gloue in the inſide to giue it a ſweete ſent in the wearing. Here I could commend the oile of beech-maſt, if it were in yealde according to the report of a Neopolitane writer: for that which is expreſſed from the nut I know to be a moſte ſweete and delicate oile.

8. I could here ſette downe an experienced triall for the alteration of tallow candels whereby to make them [illegible] manner as ſweete in handling, burning, and putting out as the waxe candle, yet not altogether ſo hard; the principall parte of which ſecret conſiſteth in an artificiall compoſition of ſome of the aforeſaide oiles. But I muſte reſerue the ſame till my ſecond edition which I will haſten according as I finde

Rochel, or Gennish, after 24. or 26. pounds the tun, and with some fiue or six shillings charge vpon a fat, they draw it against foorth wine, at the 32. li. the tun: I will not touch here the selling of new perry in steed of Rhenish wine in the moneth, as both together in equall proportion, because I feare I haue already vexed the vintners, who finde more profit in their secret practises, then pleasure in their open discoueries.

7 *How to sweeten the oyle of almonds with the aforesaid oiles, so as the same may serue the perfumer in stead of the oile of Ben, which is made of the Italian nuts.*

CHoose the newest, and sweetest Almondes, that you can get (you shall know them by their reddish colours, and I hold the Barbary Almond, far better then the Iordan almond for this purpose) expresse their oile according to the manner hereafter set down, without warming either the Almondes, or the brasen box wherein you put them, least they become rancke in a short time; after you haue drawne some quantitie hereof, let it settle foure or fiue daies, till all the *Feces* or grounds fall to the bottome, then by decantation poure away the clearest, and take a little thereof, and mingle a few drops of the oyle of cloues therewith, stirring them wel together in an apt glasse, then poure more of the oile of Almonds thereto, working as before, incorporating so much of the oile of cloues therewith, till the sent thereof like you. With this oyle thus prepared, the Perfumer may temper his muske, Ciuet, or Ambergreece, as he doth with his oile of Ben, which serueth for no other purpose, but

but onely to conuey such sents, and perfumes into the leather as hee hath wrought together for the selfe same purpose, being it selfe of no sent at all. This I write not vpon bare imagination, but vppon some proofe which I haue seene made with the simple oile of Almonds in gloues of no small price. Although I know this oile to be greatly doubted of by the perfumers, because in a few moneths it will grow somewhat rancke, whereas the fat is in the olde Almonds which the Apothecaries doe chiefly choose because they are more oily then those which are newe, and fresh.

And here if a man were disposed (*Seria ministere iocis*) were a fitte opportunity to discourse of a philosophicall contrition of oiles, thereby to defende them from putrifaction. Also if you labour, and beate well together some fresh oile of Almonds with chaunge of rose water, it will serue instead of a sweet ointment, or *Pomatum*, to annoint your hands with. So likewise of the oyle of cloues, tempered with the oyle of Almonds to rubbe a new gloue in the inside to giue it a sweete sent in the wearing. Here I could commend the oile of beech-mast, if it were in yealde according to the report of a Neopolitane writer: for that which is expressed from the nut I know to be a moste sweete and delicate oile.

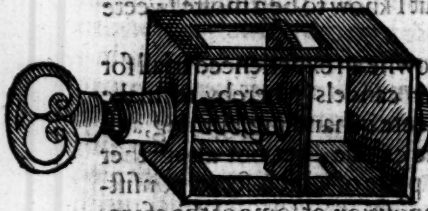
8. I could here sette downe an experienced triall for the alteration of tallow candels whereby to make them in a manner as sweete in handling, burning, and putting out as the waxe candle, yet not altogether so hard; the principall parte of which secret consisteth in an artificiall composition of some of the aforesaide oiles. But I muste reserue the same till my second edition which I will hasten according as I finde

a thankeful acceptance of the first.

How to draw oyle of Waxe, Amber, Iet, Turpentine, &c.

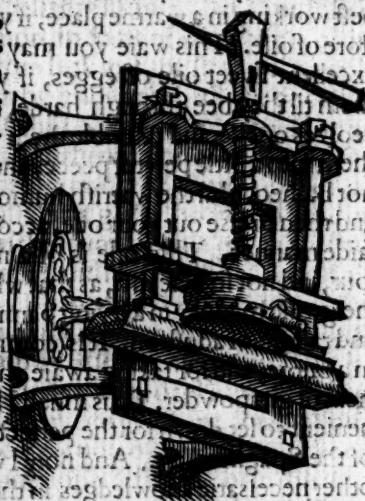
I Haue here aduisedly omitted to set downe at large, the drawing of the oile of Wax, Amber, Iett, Turpentine, &c. because moste of them are offensiue in smell. Yet let this in a word or two suffice, that all of them (except the oile of Turpentine) are to be drawn in sand, and most aptly by waie of retort, which some doo also vse to lute ouer, with lome and flockes well tempered togither: and because those vnctuous and swelling bodies shal not rise vp into the helme, they vse to suppresse them, by the addition of cleane washed sand, powder of glasse, tile stones, and such like. And as for the oile of Turpentine, it will rise by a gentle Balneo, in a cucurbite of glasse or stone, hauing a helme of glasse luted thereunto. *Qre.* If it will not rise from water out of a brasse pot, according to the maner of the oiles of hearbs and spices, before set down.

Of expressed Oyles.



Of

OF all the aforesaid seedes and spices, as there may be an oyle drawne by ascention, so likewise there may be an oyle had by expression, yea many simples will yeeld their oile by expression, which will yeelde none at all by ascention, but as you shall haue much more quantity of oile this waie, either from the nutmegs, cloue, mace, &c. so the same is much greser then the other, & more fit for outward applications then inwarde medicines, neuertheless, they carie a strong & ful sent of the aromaticall body from whence they are drawn, and haue al so their especiall vi ses. The manner wherof is this. Beat your spice or seeds, throughly well in a stone morter, and thrust them close into a peece of heare cloth, or French boulter, (which before had you must place in your mettaline box, that hath a little lose iron grate in the bottome) then lappe vp the heare cloth, laying the weight vpon it, which presseth downe the spice, and shutteth close into the box. Then put this box with the couer, betweene the sides of your iron presse, which you may laie ouerthwart a ioyned stool, placing y nose of your box, so as it may drop into a pewter peece, which of purpose you must place vnderneath the same, then



giue a turne now and then with an iron pinne to the screw, til you see no more oile to issue, (some to gain the more oile, infuse the spices in the oile of sweet almonds first.) Note that your seedes and spices, and the box with the other implementes, must bee warmed, before you expresse, and in colde weather, it is best working in a warme place, if you meanne to haue store of oile. This waie you may purchace a moste excellent sweet oile of egges, if you doo firste roast them til they bee through harde, and then take the yeolkes onelie, and crumble them verie smal, putting them into a little pewter peece, and set the same in a hot Balneo, til al the watrish humor bee euaporated, and then presse out your oile, according to the afore saide manner. This oile is of a more beautiful colour, and not so blackish, as that which is made after the grosse manner in a frying panne, which smelleth and tasteth of adustion. It is commended especiallie in a burne, and for taking awaie the inflamation and heate of gunpowder. Thus much I haue thought conuenient to set down for the perfecting of this branch of the Spagirical art. And now I wil proceed to som other necessarie knowledges in the art of distillation, concerning such matters as I am assured that euerie Gentlewoman that delighteth in Chimical practises wil be wiling to learne.

How to make Cynamon water.

THe best way is first in a braste pot with a pewter Limbeck, to distill from two or three gallons of sacke, or muscadell, so much spirit or *Aqua vitæ*, as will ascend, then poure that spirite vpon as many gallons of faire water, putting to euerie gallon of water

and ſpirit, a pound of choice Cynamon firſt bruſed, lute the ioynts of your pot and Lymbecke, as before in the extraction of the Aromaticall oyles, keeping the bunket in the head of the Limbecke colde, with change of water, and ſo draw as long as you finde any reaſonable taſt of the Cynamon. This of all the ordinarie waies is the beſt that I know. But if you infuſe your bruſed Cynamon, in ſpirit of wine onely, or in the ſpirit drawne from ſack lees, or ſtrong ale, vntill you haue gotten out by imbibition, all the tincture, taſt, and ſtrength of the Cynamon, which will be in ſeuen or eight daies, and then if you adde a new proportion of faire water, or rather of damaſke roſe water vnto it, and ſo diſtill in a glaſſe body and head in Balneo, well lated in the ioynts, I thinke you wil find this the moſt profitable, and moſt artificiall way of all others. And leaſt you happen to be deceiued in the ſtrength of your Cynamon water, you muſt taſt euery ſticke of Cynamon by it ſelfe, before you buye it, yea and the ſame at eyther ende, or elſe you may happen to be deceiued. If when you haue drawne your Cynamon water, you like not to haue it of a thicke or cloudy colour, as commonly it falleth out in this maner of diſtillation: ſome holde opinion, that it wil become cleere, onely by ſunning it in an hot ſunny day, or two: and ſome doo vſe to circulate the ſame in Balneo, til it clarifie. But I haue found it an infallible way, to haue the ſame cleere at the firſt drawing, by diſtilling the ſame in a copper Balneo, with a Lampe onely, or ſo gentle a heat as may not be idle, and yet procure but a ſoft and eaſie diſtillation. And I thinke this was Doctor *Burcots* waie, who thought himſelfe verie cunning in the diſtilling thereof: becauſe there was not much cleere cinamon water to be had, in his daies.

How to make the extractions of all hearbs.

SOme are so curious in this worke, as that no other waters, but the distilled water of the herbe only will satisfie their fancie heerein, although I see no great difference betweene the same, and an ordinary water first distilled and diuided from his impurities, but let the Chymist, nowe hee knoweth them both, take which he list, for I doo reckon indifferent, seeing that I finde it an infinite matter, to distil so much Water, as wil be requisite, for the gathering of any quantitie of this substance, or tincture as some tearme it. But with whether of them soeuer you begin, you must proceed in this manner. After you haue macerated great store of the Hearbe, in seuerall Waters, vntill such time as you finde each water deepelie died, or tincted with the colour of the hearbe; then hauing a large Balneo, wherein you may place diuers bodies of glasse at once, you must euaporate all the water vntil in the ende you leaue nothing else, but a stiffe & drie substance, which our Chimistes do call the extraction of the hearbe. Some doo choose rather to worke vpon the drie hearbe, then the moist *& alij è contra*. But if you worke vpon the distilled water of the herb, as vpon the Rose, Balm, Buglos, *Carduus benedictus*, or any such other Water of good vse or account: then is it not amisse to lute, or set your heades of glasse also vpon the bodies, with receiuers, therby to receiue the Water which ascendeth, so as there may bee no losse of your distilled waters, and yet also you may attaine to that second water which you expect. This extraction, I haue heard highlie commended of many Artistes, and it may be it hath some better vses in

phyſick, then I know or can imagine. But if I ſhal deliuer mine opinion therof, I thinke it to be the fine and ſubtile earth of the hearbe, or flower, out of the which ſome curious Limner may draw ſome excellent colour for this worke, if hee make choice of the flower de Luce, white roſe, blew bottle, Marigolde, or ſome ſuch other Flower, as is of any deepe tincture: but I perſwade my ſelfe, that no philoſophicall vulcaniſt, or perfect paracelſian, will euer finde any true magiſterie, tincture, quinteſſence, or *Arcanum* therein.

How to make the Salt of hearbs.

BVrne whole bundles of dried Roſemary, ſage, Iſop, &c. in a cleane ouen, and when you haue gathered good ſtore of the aſhes of the hearbe, infuſe warme water vpon them, and make a ſtrong and ſharpe Lee of thoſe aſhes: then euaporate that lee, and the reſidence or ſetling, which you find in the bottom therof, is the ſalt you ſeeke for. This ſalt, according to the nature of the herbe hath his operation or vſe in phyſicke, and in my conceit, doth worke greater effects in the ſtomach, than any of the aforeſaid extractions. Some vſe to filter this Lee diuers times, that their ſalt may be the cleerer, and more tranſparent.

How to draw and rectifie a ſpirit of wine in diuers manners, aſwel with fire, as without fire.

IF you would diſpatch any great quantitie thereof, you muſt haue a large Balneo, wherein you may place ſixe or eight glaſſe bodies at once, with their helmes and receiuers, each of them faſtened to a leaden riuet, y they may ſtand ſteady in the water, wher-

in

in you may put some haie if you please, poure into each of them a reasonable quantitie of the oldest and mightiest sacke, malmesey, or muscadell, because these wines are strongest, and yeeld most spirit. Your fire must be soft and gentle, so as you may tell eight or ten, betweene euerie drop that falleth. Drawe no longer, then til you may perceiue long veines in the helmes, for if they grow once deawie, or stand full of drops, then you may assure your selfe, that al the spirit is gone, and the flegmatike part of the wine ascendeth: yet there be diuers, and those of good iudgement, who doe most constantly affirme, that before the vaines appeare in the helme, the subtilest spirit of all doth arise in a drie and insensible fume, which condensating by the coldnesse of the ayre, dooth resolue into drops in the receiuer. Some doo vse at the first pinte, alwaies to change the receiuer, and so diuide that, which commeth first by it selfe from the rest, putting all the faint spirit together. And then rectifie them seuerallie in the like bodies and helmes, by a second distillation, in the aforesayd Balneo, & they neuer leaue to reiterate their distillations, vntill by making triall of a little thereof in a spoone, they finde the same being kindeled, to burne all away. Some fasten a spoonge in the mouth of the glasse body, and some couer the mouth of the glasse with an oiled paper, and so perswade themselues, that nothing but perfect spirit will penetrate either the spoonge or paper, and some put the crom of a white loafe in the bottome of the glasse, thinking thereby to sucke and drinke vppe all the faint part of the spirit. But I haue found by mine owne experience, that after there is once drawne a pinte, or a pinte and a halfe of spirit from a gallon of good wine, if the same be put into a

large

large bolt receiuer as they terme it (which is a glasse hauing a long straight steale of the bignesse of a musket, or double musket bore, with a great round hollow bal in the bottome containing some pottle, or gallon, or two or three, if you can get the so large (for the greater in content the better for this purpose) this bolt glasse must be wel fastened to a leaden triuet in Balneo, and then, if the spirit that is so grosselie drawne, bee put therein, setting a smal helme of glasse that may fit the steale, with a receiuer at it, then the pure spirit wil onelie ascend, and the flegmatique part not beeing able to mount so high, falleth downe againe to the bottome as fast as it riseth, and so at once rectifieng, you shal haue your spirit perfect enough. Others thinking to attaine to a quintessence, or at least to an oile of wine, that wil fleet and swim vppon anie other wine: they begin with a long circulation of the wine, first either in a Pellicane, or other large circling glasse, placing the same either in horse dung, or in a Balneo, or some other such like digesting heat, by the space either of a moneth or two, or three, euerie one according to his fancie, and then they fal to their diuision or distillatio by a soft fire, keeping that by it selfe which commeth first, as a most rare and excellent spirit. And al this while, if I be not deceiued, we haue gotten nothing else, but the fierie part of the wine, or rather the burning *Aqua vitæ*, both of the wine and Tartar together, that are vrged vppe by fire, to knit themselues both spiritualliе and inseparablie together. Then let vs see, if any truer diuision may be made without this Balneo, or any other outward heat whatsoeuer maie, let vs consider what may be done in a frosty furnace,

where the Northern windes must stir vppe nature in stead of glowing coales. Here I am affraide either my wit or my will, will soone be frozen vp, neuertheless since I am entred so farre, I will either breake the ice, or venture a fall, and if I slip, you shall see how I will frostnayle my selfe the nexte time that I ride abroade in such hard weather. I dare not here commend that newe conceipted way of rowling vppe and downe a large vessell of wine many howers togeather, or after the same hath wrought vppon the seaes, so soone as it commeth to shore, presently to clappe on a glasse helme vppon the bung hole being open, and luting the same close to the caske to receaue that spirite which nature in hot heate will sodainely breathe out, and yet I will not altogether condemne the inuention, if such a workeman haue it in hand, as is able to bring the stomacke of wine into a kindly sweate. But suppose this to bee a righte, and naturall distillation, though it be temperatly performed, and without any forren fire, it is not that extreame colde, and congeled worke that was promised. But what if I should send you into Frizeland, or Rushia, or Muscouy, or into some other place neere vnto the Northen pole, and there will you after *Paracelsus* his manner to lay abroad into the open aire, either a but of sacke, or muskadell, vntill the same were congealed into a masse, or lumpe of ice, and then percing the vessell euen to the center, with some apt instrument of iron, to power out that inward life, or spirit which had retired, or withdrawne it selfe from the outward colde, into the warme fort, or castle of nature? I am affraid you would rather forsweare the triall, then take so long a iourny in hande. Then let vs see what may bee donne in this kinde in our owne country, though

not in ſo greate a quantity. I haue founde by thoſe few trialls which I haue made in Lõdon, that if in an extreame, and ſharpe weather in the winter time, a glaſſe of wine containing a pinte, or halfe a pinte in meaſure, and being well ſtopte with corcke, and brimſtone, or ſome other ſtrong lute, be expoſed to the aier on the toppe of ſome high leades, that the ſame will oftentimes congeale, and freeze in one night within the glaſſe, ſo as there will not remaine aboue a moitie, yea many times a third parte onely of the wine vnfrozen, which you ſhall finde ſo deepe of hewe, and color, and ſo mightie in ſtrength, and taſte, as that the beſte Gaſcoigne wine that comes from Burdeaux will ſeeme but Rochell wine in compariſon thereof. Here wee haue an entrance made into nature, and ſince wee haue gotten ſuch holde, let vs gather in more vppon hir. Peraduenture if the glaſſes were as thin as any violl, ſmall in contente, rownde, and of an orbicular forme, riſing vppe with ſmall long neckes, and the ſame were placed Northerlie either in ſnowe, or water, or rather in water wherein ſome ſtore of ſalte peter hath beene firſte diſſolued, to make the water more inwardly colde; or peraduenture if before the ſtopping of your glaſſe you did diſſolue ſome reaſonable proportion of ſnow water into your wine, that either ſome one of theſe helps, or altogether might work a perfect congelatiõ of the faint, and phlegmatick part of the wine, and ſo ye might attain to your deſire. But without al peraduẽture ther may be (by ſome means that are kn own but to a few) ſuch an outward continued cold maintained roũd about y glas, as that in any reaſonable cold weather the ſpirit may be forced to fly inwardly for ſuccor into his own boſome & being once driuen to this

ſtrelght, I account him but a ſimple chimiſt that cannot fetch him out, and diuide him from the reſſe of his groſſe body. Proue the freezing of ale, or beere, or of the ſmaleſt kinde of wine, for they are likelyeſt to freeze, becauſe they containe but ſmall ſtore of ſpirite in them. Although I haue ſeene euen ſacke it ſelfe gather a thin icie cruſt in one nights freezing.

To make claret wine to mount vp in a red clowde into a glaſſe of conduit water.

CAuſe a glaſſe to bee made of the faſhion of thoſe which are commonly vſed in hower glaſſes, but of ſome greater content, and with a leſſe lippe, fill the ſame full of faire water, and whelme it vppon the mouth (which becauſe it is ſmall, and wanteth aire, no droppe will iſſue thereat) then put it into a beere glaſſe of the forme here deſcribed, being almoſt ful of claret wine, and if you holde the ſame wiſely, and that the glaſſes fit one another, you ſhall ſee the claret wine aſcende in the forme of a clowd, and that which remaineth in the neather glaſſe to be exceeding faint both in taſt, and color. If either the tincture alone, or the ſpirite of wine did here aſcend, and ſo incorporate it ſelfe with the water, I would hold it for a rare ſecret, and a light into ſome farther matter: but I feare you will finde nothing elſe therein but that when two bodies touch each other, that the wine being the lighter ſeeketh the vpper

place

place. And yet I must needes commend the inuention of that honest and learned Gentleman, from whom I had it, and no doubt before the discouerie thereof, it would haue beene thought an admirable conceit, to haue made two seuerall glasses to haue exchanged their liquors, without any farther meanes.

Ad extrahendam vitam è vegetabilibus.

PRimum contere herbam, tunc digere Balneo, in vase lapideo benè obturato per octo horas, aut vlterius per noctem: tunc per torcular succum exprime, quem in Balneo moderato non bullienti distilla, et in Alembitz fundo gummi quoddam relinquitur: aquam hanc prædictis facibus contusis affunde, iterum digere, deprime, & distilla in eodem Alembico, vbi gummi prædictum remanet, hoc opus continuetur donec aqua tincturam prioris, & herbæ receperit, aut aliquid gummi post distillationem reliquerit: tunc totum illud gummi sic collectum aqua sua digere, qua tum in digestione tincturam, aut puriorem partem eiusdem gummi in se recipiet, et in fundo faces relinquet, à quibus filtra aquam tuam tinctam quam rursus in Balneo distilla, & sic reperies in vitri fundo herbæ puram essentiam, sicut puluerem, aut gummi speciem præseferentem. Aquam seriæ, & puluerem siccum vsui tuo. This was deliuered me, by the sonne and heire of a Noble man, who receiued it of one of the greatest practisers of my time, and if it answere the title, I am glad that it was my good hap to light vpon it.

How to giue a pretty grace both in tast and propertie, vnto the spirit of wine.

IF you infuse the same vppon the rinde of a ciuel sower Orange, or Lymon, you shall finde a pleasant

and comfortable taste thereby, or if you woulde not haue the same described by his colour, you may redistill the spirit so tincted in balneo. Some giue a tuch vnto the spirit of wine with rosemary, some with annis seedes, some with sweet fennell seedes, som with one seed, or hearbe, and some with another, by infusing the same a day or two vpon them.

How to draw the spirit of Hony.

AFter you haue dissolued sufficient store of honie in faire water, to make a good Metheglen, and that the same hath wrought a reasonable time by the addition of yeast, according to the manner of beere, and ale, then when the same is growne vnto a strong and mightie drinke by lying, you may drawe a spirit from it, by distillation, as you doo either from wine, Ale, or beere.

How to distill Rose Water, both good cheape, and at Michelmasse, and to haue as good yeeld, as at any other time of the yeere.

IN the pulling of your Roses, first diuide all the blasted leaues, then take the other fresh leaues, and lay them abroad vpon your table, or Windowes, with some cleane linnen vnder them. Let them lie three or foure houres, or halfe a day, but if they bee gathered in the deaw, then lay them abroad as before, vntill all the deaw be vanished and gone from them, put these rose leaues into great stone potes, that bee leaded within, and well dried (such as the Golde finers call their Hookers, and serue to receiue their *Aqua fortis*, be the best of all others that I know.) And whe

they

they are well filled, ſtoppe their mouthes with good corkes all couered ouer with melted brimſtone, and then ſet your pots in ſome coole place, and they will keepe a long time good, and you may diſtill them at your beſt leyſure, this way you may diſtill Roſe-water good cheape, if buying ſtore of Roſes when you finde a glut of them in the maket, whereby they are ſold for ſeuen pence or eight pence the buſhel, you put them vp as before. And ſome hold opinion, that if in the midſt of theſe leaues you put ſome leauen, and after fill vp the pot with roſe-leaues to the top, that ſo you ſhall haue a roſe-vineger from the roſe in your diſtillation, without the addition of any vineger at all. You may alſo keepe them in glaſſes, and I haue knowne ſome kept in little rundlets, that haue bin firſt wel ſeaſoned with ſome hot licor, & roſeleaues boiled togither, and the ſame pitched all ouer on the ouſide, ſo as no aire might penetrate the veſſell. *Qre.* If any ſpirit will ariſe, if you make ſeparation of that which firſt ariſeth from the roſe-leaues kept as before. Some for the more expedition in roſe-water do firſt expres the iuice, and then diſtill it, and afterward they do alſo diſtill the expreſſed leaues, and ſo they diſpatch more with one ſtill then others do with three or four. I haue ſeene very good roſe-water drawne this way, but yet I take the ordinarie way to be more kindly eſpecially if the head of your ſtill be made like a Limbecke with a large bucket to hold ſtore of roſe-water. And ſome commend the diſtillation of the roſe violet, cowſlop, &c. that is performed by a deſcenſorie, hauing alſo a cooler of cold water about it, which at a certain cock you may emptie as it heateth from time to time, and fill with freſh water againe.

and comfortable taſte thereby, or if you woulde not haue the ſame deſcried by his colour, you may redi-ſtill the ſpirit ſo tincted in balneo. Some giue a tuch vnto the ſpirit of wine with roſemary, ſome with annis ſeedes, ſome with ſweet fennell ſeedes, ſom with one ſeed, or hearbe, and ſome with another, by infuſing the ſame a day or two vpon them.

How to draw the ſpirit of Hony.

AFter you haue diſſolued ſufficient ſtore of honie in faire water, to make a good Metheglen, and that the ſame hath wrought a reaſonable time by the addition of yeaſt, according to the manner of beere, and ale, then when the ſame is growne vnto a ſtrong and mightie drinke by lying, you may drawe a ſpirit from it, by diſtillation, as you doo either from whie, Ale, or beere.

How to diſtill Roſe Water, both good cheape, and at Michelmaſſe, and to haue as good yeeld, as at any other time of the yeere.

IN the pulling of your Roſes, firſt diuide all the blaſted leaues, then take the other freſh leaues, and lay them abroad vpon your table, or Windowes, with ſome cleane linnen vnder them. Let them lie three or foure houres, or halfe a day, but if they bee gathered in the deaw, then lay them abroad as before, vntill all the deaw be vaniſhed and gone from them, put theſe roſe leaues into great ſtone pottes, that bee leaded within, and well dried (ſuch as the Golde finers call their Hookers, and ſerue to receiue their *Aqua fortis*, be the beſt of all others that I know.) And whe they

they are well filled, ſtoppe their mouthes with good corkes all couered ouer with melted brimſtone, and then ſet your pots in ſome coole place, and they will keepe a long time good, and you may diſtill them at your beſt leyſure, this way you may diſtill Roſe-water good cheape, if buying ſtore of Roſes when you finde a glut of them in the maket, whereby they are ſold for ſeuen pence or eight pence the buſhel, you put them vp as before. And ſome hold opinion, that if in the midſt of theſe leaues you put ſome leauen, and after fill vp the pot with roſe-leaues to the top, that ſo you ſhall haue a roſe-vineger from the roſe in your diſtillation, without the addition of any vineger at all. You may alſo keepe them in glaſſes, and I haue knowne ſome kept in little rundlets, that haue bin firſt wel ſeaſoned with ſome hot licor, & roſeleaues boiled togither, and the ſame pitcht all ouer on the outſide, ſo as no aire might penetrate the veſſell. *Qre.* If any ſpirit will ariſe, if you make ſeparation of that which firſt ariſeth from the roſe-leaues kept as before. Some for the more expedition in roſe-water do firſt expres the iuice, and then diſtill it, and afterward they do alſo diſtill the expreſſed leaues, and ſo they diſpatch more with one ſtill then others do with three or four. I haue ſeene very good roſe-water drawne this way, but yet I take the ordinarie way to be more kindly eſpecially if the head of your ſtill be made like a Limbecke with a large bucket to hold ſtore of roſe-water. And ſome commend the diſtillation of the roſe violet, cowſlop, &c. that is performed by a deſcenſorie, hauing alſo a cooler of cold water about it, which at a certain cock you may emptie as it heateth from time to time, and fill with freſh water againe.

How to dry rose leaues, or any other single flowers in such shape as they grow, and without any wrincles, so as a bushell of moist leaues shall become a bushell in measure when they bee dry; and how to keepe rose cakes, and rose leaues all the yeare without wormes.

IF you woulde performe the same well in rose leaues, you muste in rose time make choise of such roses as are neither in the bud, nor full blowne (for these haue the smoothest leaues of all other) which you must especially cull, and choose from the reste. Then take of right callis sand, and washe the same in some change of waters; and dry it throughly well either in an ouen or in the sunne, and hauing shallow square, or long boxes of foure, or fiue, or sixe inches deepe, make first an euen lay of sande in the bottome, vpon the which lay your rose leaues one by one (so as no one of them touche another) till you haue couered all the sand: then with a spoone, or with your hand, strew sand vpon these leaues til you haue thinly couered them all, and then make another lay of rose leaues vpon the sande, and so make *Stratum super stratum* for foure or fiue layes one vppon another. Set this boxe abroade in some warme place in a hot sunny day (and commonly in two hot dayes they will become throughly dry) then with your hande, or a spoone, you muste striue gently to get vnderneath them, and so to lift them vp without breaking. Keepe these leaues in iarre glasses bound about with paper, or parchment in some cupbord that is neere a chimney, or stoue, least otherwise by the damp of the ayer they relent again, and so you loose your labour. I find the red rose leafe beste for this purpose by reason of

his

his deepe colour. You may alſo drie Paunſies, Stockgilliflowers, and other ſingle flowers, ſuch as will hold their colour beſt, in this maner, by taking away their ſtalkes, and pricking them one by one into the ſande, and ſo preſſing their leaues ſmooth with the other ſande, which you muſt lay vpon them. And ſo you may haue roſeleaues, and other flowers to lay about your baſons, windowes, and court cupboords, all the winter long. Alſo this skil is verie requiſite for a good ſimplifier, becauſe he may drie the leafe of any hearb in this maner, and lay it being drie in his herball with the ſimple which it repreſenteth, whereby hee may eaſilie learne to know the names of all ſimples which he deſireth. The ordinarie drying of Roſe leaues, is to lay them vppon hot leades, in a hot ſunnie day, and the ſooner you diſpatch, the better they will keepe their colour, and ſent. And when you haue dryed them throughly, you may fill a Roſe-water Glaſſe therewith, ſtopping it cloſe, and ſo they will laſt good a long time.

The powder of Roſe leaues, and ſo alſo of all other herbs & flowers, may be kept from all outward accident for one yeares ſpace, if there bee anie reaſonable care vſed therein.

If you would keep your roſe cakes without worms, you muſt now and then, when you haue drawne your bread out of the ouen, ſet them in, in ceeues, or vpon papers, and ſo of your roſe leaues; and if you hang them vp in paper bags, neere ſome Chimney where fire is ſomtimes made, you ſhall be ſure to keep them ſweete and good, for any vſe for which they will ſerue, although I know diuerſe that keepe their roſe leaues only according to the maner afore ſet downe.

Rose water, and rose vineger of the color of the rose, and so of the Cowslip, and violet vineger.

SOme infuse rose water vpon moist red rose leaues, and so set it abroad on sunning for a fewe daies, but this color cannot last long, but if you woulde make your rose water and rose vineger of a perfect ruby color, then make choise of the crimsen veluet colored leaues clipping away the whites with a pair of sheres and being through dry put a good large handfull of them into a pint of damaske, or red rose water, stop your glasse well, and set it in the sunne till you see that the leaues haue loste their color, or for more expedition you may performe this worke in balneo in a few houres, and when you take out the olde leaues you may put in fresh, till you finde the color to please you; keepe this rose water in glasses very wel stopt, and the fuller the better. What I haue said of rose water the same may be intended of rose vineger, violet, marigold, and cowslip vineger, but the whiter vineger you choose for this purpose you shall haue it the better colored, and therefore the distilled vineger is the best of all others, so as the same bee warely distilled with a trew diuision of the partes made according as hereafter is set down, but some do highly commend such vineger as is made of elder flowers, choicely pickt, and well dried before imbibition.

How to distill wine vineger or good Aliger, that it may be both cleere, and sharpe for sauce, or other vses.

I knowe it is an vſuall maner amonge the nouices of our time to put a quart, or two of good vineger, into an ordenary leaden ſtill and ſo to diſtill it as they do all other waters. But this way I do vtterly diſlike both for that here is no ſeperation made at all, and alſo becauſe I feare the vineger dooth cary an ill touch with it either from the leaden bottome, or pewter head, or both. And therefore I could wiſh rather the ſame were diſtilled in a large body of glas with a head or receauer, the ſame being placed in ſande or aſhes. And note that the beſt part of the vineger is the middle part that ariſeth, for the firſt is feint, and phlegmatique, & the laſt wil taſte of aduſtion, becauſe it groweth heauy towards the latter end, and muſt be vrged vp with a great fire, and therefore you muſt now and then taſte of that which commeth both in the beginning, and towards the latter ende, that you may reſerue the beſt by it ſelfe. Here I coulde alſo aduiſe, or wiſh al Ladies, and gentlewomen to haue all their vineger ſerued in at their tables in ſawcers of glaſſe, or purſlaine, becauſe if it be ſtrong, and continew longe in a pewter ſawcer, it hath an intention towardes ceruſe, which I cold neuer heare commended either for wholſome meat, or ſawce for a mans ſtomacke. But it may be this is but one doctors opinion, & that of ſuch a one as neuer deſerued his degree in ſcholes; and therefore I will leaue the ſame at large vntill ſom better clarke do hereafter confirme this greene conceipt. Here I cannot omit the profitable obſeruation of one of our London Chimiſts, who after hee had drawn good ſpirit out of wine from muskadell, did by ſunning of the ſame alſo make good vineger the fæcicall parte therof.

How to keepe the iuice of Oranges, and Lemons all the yeare, for sauce, Iulepps, and other purposes.

I know no reason why the iuice of the Lymon, or Orange shoulde not keepe as well in small woodden vessels, as either vergis, sider, or perry, and it may bee the want of triall hath only proceeded of the charge that would arise in filling of a small vessell only with such liquor. But how then haue we forgotten to prouide our store in glasses which we may fill with a smal charge when oranges are to bee had for xii pence or xvi pence the hundred? Let vs then expresse their iuice, and passe it through an ypocras bagge to the ende it may bee the better clarified from all his impurities: with this iuice fill vppe a rose water glasse (of what content you please) within an inche of full, couer the same with a lose cap of leather till it haue done his boyling, which I haue seene continew many daies togeather, and when it becommeth stil, and quiet in the top, then fill vp your glasse with good salet oile, and then set it in a coole closet, or buttery where no sun commeth. But the apt est glasses which I can imagine for this purpose were streight vpright ones, like to our long beere glasses, which I woulde haue to be made of purpose at the glasse house with small round holes within two inches of the bottome, in which holes I woulde place fit faucets to draw the iuice thereat, as I should haue cause to spend it. And so the grounds, or lees woulde settle to the bottome, and the oile woulde sincke downe with the Iuice so closely, as that no aier coulde enter to begin any putrefaction therein; or instead of holes if there were glasse pipes, it were the better, and the redier way, because

cauſe you ſhall hardly faſten a fawcet well in the hole. You may alſo in this manner preſerue many iuices of herbs, that cary ſom ſtore of heat, & fire in them, by couering them a reaſonable thickneſſe with ſallet oile. But there is a better way then this by many degrees (although this bee ſufficient for ordinary vſe) for the long and true preſeruations of all iuices, and liquors, whatſoeuer, that haue had no digeſtion, or decoction already, wherein neither oile, nor any outward helpe is required, but only a trew, and philoſophicall rotation whereby the inwarde fire of nature may be ſtirred vppe in euery vegetable, to defende it ſelfe ſufficiently againſte all putrifying whatſoeuer. And ſo I haue kept both the iuice of cowſlips which (if I be not deceaued) will not laſt long by any ordinary courſe of preſeruing, and the iuice of oranges ſimply of themſelues without any addition, as ſound and perfect at the yeares ende, as they were the firſte day, or rather (to ſpeake truly) ſomewhat exalted in kinde. But becauſe ſuch ſecrets are fitter for a philſophers laboratory, then a gentlewomās cloſet, I wil not here offer that diſgrace vnto nature, to diſcouer any magiſtery vppon ſo baſe an occaſion. And as concerning the keeping of Oranges, and Limons in the ſame ſtate, bigneſſe, color, and taſte, as they are brought vs out of Spaine, or portingall, it may bee that in my next labours I will write at large thereof, and in plaine termes, according to thoſe vndoubted & approued trialls which I haue often made in mine owne houſe for many yeares together.

How to purifie and giue an excellent smell and taſt vnto ſallet oile.

I Haue laboured the more to attaine vnto this ſecret, becauſe I know that oile is a moſt excellent and wholeſome food, and yet my ſtomach hath alwaies abhorred the ſame, till of late, that I found the meanes to take away the fulſome taſte thereof. But firſt of all, let vs ſee, what Maiſter *Bartholomeus Scappius*, the maiſter cooke of Pope *Pius Quintus*, his priuie kitchen, hath written in this behalfe. Hee willeth to heate the oyle in a cleane pipkin, and when it is thorough hot, to put therein a peece of bread or of dough, ſuffring the ſame to remaine in the oyle, by the ſpace of one fifth part of an houre: and this bread or dough, will drawe vnto it ſelfe all the ruſtie and baddo taſte or ſent of the oyle, and ſo the oyle will remaine pure and cleane. And in an other place, hee willeth, to take ſuch oyle as is not ranke, or ouer ſtrong in ſent (and if the ſame oyle bee made of chooſen Oliues, it is by ſo much the better, than the common ſort) and to put the ſame in a veſſell of Earth or Copper, that hath a little hole in the bottome thereof, which you may ſtoppe with wax to open at your pleaſure. In this veſſel for euery quarte of oyle, adde foure quartes of faire Water, and with a Woodden ſpatle or ſpoone, beat them wel together for a quarter of an howers ſpace, and when you haue ſo doon, open the hole in the bottome, and let out the water, for the oyle doth naturallie fleet aboue, as being the lighter bodie: and as ſoone as the Water is paſſed awaie, ſtoppe the hole, and put in other colde water, and begin a newe agitation as before, and worke in the

the like manner diuers times as you did at the firſte, til in the end the oile bee well clenſed, and clarified. In the ſame manner you may alſo purifie all other ſorts of oile, as alſo capons greaſe being firſte melted, but then it ſhould ſeem you muſt vſe warm water inſtead of colde. All this is borrowed of the Popes cooke.

2re. If the oile had benne beaten the laſte time in roſewater wherein cloues, or nutmegs had benne infuſed before. And for the ſpeedier clarifying thereof (after your foreſaide agitations are paſte) you may ſette your oyle either in a ſtoue, or in the ſunne till it become cleere. A Grocer of good skill did aſſure me that by ſetting of ſalet oyle in the ſunne in the ſommer time, hee had ſeene the ſame to ſettle greate ſtore of foule and groſe lees, from the which by declination hee powred out the cleere oyle, and kept it till the next winter, and after the ſame had ben congealed with ſome froſty weather, hee found it the moſt ſweete, and delectable oile that euer hee taſted in his life. But an oile man of ſome experience tolde me that if ſome bruſed nutmegs were hong in a corſe bagge in the midſt of the oyle, that in time the ſame would ouercome any bad and loathſome taſt, that by ſome accident had infected the oyle, and giue it alſo a pleaſant ſent withall, or if you ſette a iarre in Balneo full of waſhed oile as before, with ſome ſtore of bruſed cloues, and rindes of cittil Oranges or Lemons, and ſo continew your fire for two or three howrs, and then lettinge the cloues and riendes remaine in oile, till both the ſent, and taſte do pleaſe you, I thinke that many men which at this day do loth oile (as I my ſelf did with in theſe few months) wil be drawn to a ſufficient liking therof. I do know a means how to make

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dejection of the Lee or faces of y best fallet oyle, that commeth ouer, whereby the same will become most pure and cleere, but I feare that Saturne would frown vpon me (if without his leaue) I should so boldly entermeddle with his charge.

How to dissolue both Corall, and Pearle.

INfuse the iuice of Lymons that is cleere, and hath seeded his residence vpon the powder of pearle, and it will dissolue the same, by the experience of a learned physitian who hath made proofe therof, and giuen the same with very good successe in hot burning Feauers. The spirit of Vitriol also, which riseth presently after the flegme, and before the oyle, will dissolue both corall and pearle, if you set your glasse in warme sande, or Ashes. *Qre.* Whether the same may be safely taken inwardlie, being thus dissolued, or rather fretted in sunder, and without any further ablutions: but if you take twoe ounces of whole seede pearle, and infuse thereon a quart of distilled vineger in a parting glasse, or in any other strong glasse of an apte forme, you shall in seuen or eight daies, dissolue them into a soft or slimie substance, which you may after cleanse by ablution, if you thinke good. And this is doone without any fire, or outwarde heate, during which worke, you shall see the pearle rising, and falling in the glasse, in the manner of a continuall haile,

How

How to clarifie without any distillation, a fine cleare white Wine as the Claret Wine vineger, wherewith you may make either gellies, or other sawces.

CHoose of the strongest Wine vineger that you can get, and to euery six pintes, put the whites of two new laid egges, beate them well togither with a woodden spoone, vntill the whites bee turned into a froath or foame, then put the same into a new leaded or glazed pipkin, and cause the same to boile a little ouer a fire of coales, but not a flaming fire. Then let the same runne through a course white kaffey gellie bagge, as they vse to doo gellies: and when it hath runne through the same twise or thrise at the most, it will be verie cleere, and serue for the aforesaide purposes, and it will keepe a good one whole yeare. And in the same manner, you may fine or clarifie any manner of wine whatsoeuer. But that which you shall gaine in the cleerenes, you shal lose in the strength of your wine.

How to make any decoction, whether it be of diet drinke or other, in the sommer time to last longer then otherwise it would without any helpe.

I Know this secret will bee verie profitable to all the Apothecaries, who in Summer time sustaine great losse by the sowring and putrifying of their decoctions, whereof some be also very chargeable vnto them, and yet I feare, though I know the conclusion to bee true, easie, and not chargable, that it will scarsely satisfie some of them, which are of a curious humour, because it is so plaine and sleight, and therefore dero-

gatory to their great skils that they should so lóg time be ignorant in so simple a conclusiō. Neuertheles because I know that diuers others (if they should dislik) will make vse thereof, I thinke the same very necessary to be published. One day, or two, before you feare the decay of your decoction, set the same on the fire and gite it a walme, or two, and so nowe and then reboile the same a little, and if you doubt that the same will become either too thicke, or too strong by many newe decoctions, you may alwaies adde so much liquor there vnto made according to the first receipte, as you thinke will wast away at euery boyling, and then keepe the same close, and in a coole place. This may bee also performed in another maner without fire, or any other addition, & to last as many months, as it will daies the other way. But here I must keepe *decorum*, and sute grosse matters, with grosse conclusions. It may suffice that I haue setne downe any way for that, which no way was made common before.

How to draw the true spirite of Roses, and so of all other herbs, and flowers what soeuer.

MAcerate the role, either in the water, or in his owne iuice, adding there vnto being temperately warme a conuenient proportion either of yeast, or ferment, leaue them so a few dayes in fermentation till they haue gotten a stronge and heady smell and beginning to encline towards vineger. Then distill them in Balneo in glasse bodies luted to their helmes, and drawe so long as you finde any sent of the rose to come, then rediftill, or rectifie the same so often till you haue purchased a perfect spirite. Also if you ferment the iuice of Roses only without any leanes mixed therein, you may draw an excellent spirit from the same.

same, or if you keepe the iuice of damask roses onely in close vessels well seasoned with the rose, it will yeald a delicate spirit after it hath wrought it selfe to a sufficient head, by the inward rotation, or circulation of Nature, but this worke asketh a longer time before you can proceede to distillation. The laste way and beste way of all other that I knowe, is by an outwarde fire to stirre vp the moist, and inwarde fire of nature, till the same be growne to the fulnesse of a rose wine. And when you haue once broughte it to a wine then euery Apothecary, and ordinary practicioner in this art will easily diuide his spirit from him, but they will all stagger in the firste digestion, and though they should either reele, or fall, I may not lende them my helping hand, otherwise then I haue donne already, vnlesse I were assured that they were of the nombet of *Hermes* sonnes, and not begotten by some base alchimist.

How to draw the true and simple oile of Roses.

DRy 20. or 40. bushels of damaske roses, according to arte, put them with a sufficient proportion of water (some commende rose water, others rather the iuice of roses) into a large copper body whose heade must haue a cooler of large content; lute the ioyntes well, and after a little maceration giue a proportionall heate vnto the body, and with the water the oile will also ascend and fall into the receiuer. Proue the same manner also with the moiste leafe, and if you see any apparant difference either in colour or thicknes betweene the oile & the water, then you knowe how to diuide the same easily, but if you can no way

diſcerne the oile, then poure that which you haue in your receiuer, into a bolt glaſſe, hauing a long ſteale, or into ſome other glaſſe, that riſeth vppe in a ſpiring manner, leſſe and leſſe toward the toppe: but fill the glaſſe full, and ſo peraduenture you ſhall finde the oile after a little repoſe, fleeting vpon the toppe like creame, which you muſt ſeparate with a feather, and keepe by it ſelfe. This is either a certeine, or a verie probable way of proceeding. But if I coulde ſell the ſecret but for ten yeages purchace, I woulde paſſe it with a generall warrantize againſt al obiections, in the meane time let it ſuffice thee, that I haue in this litle, exceeded my commiſſion.

Ypocras made ſpeedilie.

TAke of Cynamon oz. ſ. white Ginger dr. 3, cloues and nutmegs, of each dr. ſ. of the greines of paradiſe, ſc. 2. of pepper, ſc. 1. let them bee beaten ſomewhat groſely, and then macerated in halfe a pound, of ſpirit of Wine, ſtopping the veſſell cloſe with flower and water. Let al theſe ingredientes remaine ſix daies in infuſion, in a cold wine ſeller, ſtirring them togither twiſe a day at the leaſt: a fewe drops of this compoſition will tranſmute a boale of wine into ypocras. This receipt may beſeeme the doctor that firſt deuiſed it, yet by his fauour, I thinke it requiſite, after you haue made the Wine thus Aromaticall, that you alſo adde a dewe proportion of ſugar, without the which in theſe daies there is nothing accounted either daintie or delicate, and then you muſt alſo paſſe the ſame through an ypocras bag, til it bee fine. I thinke you may alſo performe the ſame with ſpirite of beere, ale, or wine lees, much cheaper.

Of touch at Borax Christalinus.

THere is a certeine proportion of Borax to bee mixed with the *Regulus* of Antimonie, which must be chimically calcined togither, vntill the Borax haue glutted himselfe with the Spirits of Antimonie. And this is thought to be a safer vomit, then either the crude or calcined Antimonie, or the *vitrū Antimonij*, that is broughte to the colour of the Iacinth, because in all these preparations, the body it selfe of Antimony is retained. But in this preparation you take holde of the spirits onely. This may safelie be giuen in powder, in the pappe of an apple, to the quantitie often, twelue, or fourteene graines: or else the same may be finelie ground vppon a Marble, and then imbibed with a small proportion of wine, which being dreyned from the powder, must bee taken fasting, in the morning, according to the order of other vomits. I cannot here omit that, which I will neither warrane, nor condemne, (although I knowe to which side I would rather incline before trial) that infinite extention of the glasse of Antimony, vppon which there may be made so many seuerall infusions, and all of them of sufficient efficacie to giue a vomit, as that by some men of note, and good reputation, it hath beene thought to be a necessary part or member of the philosophers stone.

How to make Camphire remaine liquid in the forme of a oile.

IT must beate to grosse mortery, then beat the Camphir, as thin as you can, put thereto by little and little at

once equall proportion of the oyle of Almondes, newly drawne, and incorporate them well togeather, and it will remaine in the forme of a cleere oyle without any congelation. I thinke the ſpirit of Wine will diſſolue the ſame, but when you diuide the ſpirit by diſtillation, the oyle is likely to congeale in the bottome of your glaſſe.

An artificiall extraction, of that ſweet ſirrop of raiſins, currans, and proines.

TO euery Gallon of faire water, put three pound of Malaghie reaſons, or reaſons of the ſunne, either ſtampt or vnſtampt, leaue them ſeauen or eighe daies in infuſion, in ſome little halfe tubbe, hauing a fawcet in the bottome thereof, at the which you may dreine out gently al that ſweet ſirrop which lyeth in the bottome, drawing ſo long as you ſee any deepe colour in the water, then ſtop the fawcet, and put in ſome more fruit, and deuide as before, and hauing purchaſed a ſufficient quantitie of this ſweet lyquory boile the ſame away in an ordinary chafer, or kettle vntill it grow vnto ſome thickneſſe, and then for feare of aduſtion, you may finiſh the ſame in Balneo. Expoſe this in diuers apt veſſels, and in ſmall quantities to the heate of the ſunne, againſt a brick wall, vppon plates of lead, when the ſunne is of ſome reaſonable heigth, as in Iune, Iuly, or Auguſt. And if you bee carefull in my direction, you ſhall haue a moſt rare, and delicate marmelade (if I may ſo tearme it) and the ſame alſo candied and hardened into a very ſtiffe ſubſtance, moſt naturallie taſting of the fruite from whence it is drawne. You may worke after the ſame manner, both in figges and currens, which for more cleanli-

cleanlineſse, I could wiſh alſo to be waſhed in ſome change of Waters. *Qre.* What an Artiſt may do in this practiſe, both in Cherries, Grapes, Damſons, Gooſeberies, Barbaries, and generally in all Engliſh, and outlandiſh fruites and flowers. But then it is requiſite to dry ſome of thoſe fruites ſufficiently in the ſunne, before you make your imbibition, and to roaſt or partch others with ſome farther heat, diuiding the skinnes, cores, and other refuſe, before you make your extraction.

How to preſerue damſons, cherries, peare plums, gooſeberries, &c. in their owne iuice or ſirrop without the addition of roſewater.

LAy a conuenient number of plums, cherries, gooſeberies, &c. in a deepe ſallet diſh or ſiluer baſon, one by one, couer the ſame cloſe with ſome other diſh, and ſet it vpon a chafingdiſh of coales, beginning with a gentle heat, vntill the fruit haue gathered a great deaw or moyſture vnto themſelues, then take of the ſweeteſt Barberie ſuger and ſtrew the ſame vpon the fruit, beeing firſt brought into a moſt fine powder (twelue ounces of ſuger is a ſufficient proportion for one pound of fruit) but if you pleaſe you may allow weight for weight) continue your fire vntill ſuch time as you ſhal find that the ſirrup hath pierſed the ſtone euen to the kernel, for then they are boiled ſufficiently, but if ẏ kernel do wrinkle or run together, then they are ſomewhat ouer boiled. Alſo you muſt not forget to turn them now & then, and to obſerue al other circumſtances, as you vſe in the ordinary manner of preſeruing.

The end of the booke of Diſtillation.

cleanlinesse, I could with allo to be wayted in lome change of Waters &c. What an Artift may do in this practife, both in Cherries, Grapes, Damons, Goofeberies, Barberies, and generally in all Impalls, and ouglandilh fruites and flowers. But then it is requilite to dry fome of thole fruites fufficiently in the fume, before you make your ambition, and fo roaft or parch others with more further heat, dividing the skinnes, cores, and other refuſe, before you make your extraction.

How to preſerve damſons, cherries, peares, apples, &c. in their own iuice or fyrup without the addition of ſyrup or ſugar.

TAy a conuenient number of plums, cherries, goofeberies, &c. in a deepe leaden dish or ſlucer bafon, one by one, couer the ſame cloſe with ſomo other diſh, and let it vpon a chafing diſh of coales, beginning with a gentle heat, vntill the fruit haue gathred a great deale of moyſture vnto themſelues, then take of the ſweeteſt Barbaries iuice and ſtrew the ſame vpon the fruit, beeing firſt brought into a moſt fine powder (twelue ounces of ſugar is a ſufficient proportion for one pound of fruit) but if you pleaſe you may allow weight for weight) continue your fire vntill ſuch time as you find that the ſyrup hath pierced the ſtone euen to the kernel, for then they are boyled ſufficiently, but if y kernel do wrinkle or run together, then they are ouer boyled. Alſo you muſt not forget to turn them now & then, and to obſerue all other circumſtances, as you vſe in the ordinary manner of preſeruing.

The end of the booke of Diſtillation.

The Art of molding and casting.

FIrst you must labor common loame a little moistned, to a stiffnes: working ỹ same smooth with a rolling pinne, as they vse to doe past, then make thereof a coffen like vnto a pye, saving that you shall need no other bottome but the bord, or table whereon you worke, and that you must fashion your coffin according to the patterne, which you meane to cast, for sparing of your pap hereafter mentioned. Fasten well this coffen, or sides of lome to your table with your fingers, so as the thinne part of your pap may not run out at the bottome, then take a branch of rosemarie, tyme, or Isope &c. and at the end of the steale fasten a little lump of loame made taperwise with the small end thereof towards the stalke, & the greater end fasten likewise to the midest of some part of the sides of your coffin in the inside, so as the same may sticke fast ouerthwartwise, and that no part of your braunch either touch your table in the bottom, or reach to the vppermost part of the sides, for which cause you must alwaies make your coffin deeper the your braunch, or flower which you meane to cast, then make your pap in a woden dish, or stone panne, presently stirring the composition well togeather,

either with your finger for a shift, or some other apte brush, or pensill, that there may be a solution, or mixture of the licor, or powders together. Then powre the same speedily about the sides of your branch, hauing care that you doe not losen the same from the coffin, and bee sure that you make pappe enough to couer all your braunche at once, whereat, by often practise you shall easily gesse. Let the same stande a prety while .s. about the fourth part of an houre, and the whole composition will harden into a masse or lump, then take away your lome sides from it which will serue oftentimes, and you haue your branches included therein, then with a little sticke digge out the peece of lome, which you fastened to the stalke of your braunch, but so as you impare not the molde, then lay your branch abroad for a time in som ayrie or windy place, but not in the sun, and after neale it in a little earthen furnace, making first a foundation of Charcoles, and afterward laying your molde vppon them, and then couering your mold with more charcole, and kindling your fire at the vpper most coales, and so continew your fire by adding of freshe charcoles, till you see that the molde be well nealed .s. that it be red hotte, both within, and without, which you shall perceaue by a little hole, which the lome made at the end of the stalke, which they call their gitte: if enclining your body you look therein carefully. Then let the fire goe out of it selfe, and suffer the molde to coole; then hath the branch or flower lefte the impression thereof in the molde into the which when you haue cast your gold, or siluer, you must dipp your mold in cold water, whereby it will fall in pieces, and you shall finde your braunch of gold and siluer in all points according to the patterne. All other necessary

cir-

circumstances for this art doth presently ensew.

1 You must first roast or burne the plaister of Paris, before you mixe the same with the reste of the powders, which some men do in this manner. They breake the stones in great gobbets, and then laying some coales in a little stone furnace, such as are solde at more gate; they lay these pieces together vpon the coles, and then couer them ouer with coles, and after kindle the fire at the top, and so let the same burne downewardes, and with one fire so made they will be sufficiently burnt, then beate them into powder, and searce them as before, but if they breake not easily then they doo burne them longer. Others thinke it a better way though more longe and troublesome, to beate the plaster in a great iron morter to a fine powder, and then to sette the same in the fire, in a large strong earthen pot, or pipkin, making a good fire vnder it, and stirring it continually, with a wodden spattle for an houre, or there abouts, and vntill you see the spattle leaue as it were a visible line, or tracte behind it, after you haue stirred the pouder round about there with. Preparatiō of the plaister.

2 Let your powder whereof you make your pap consist of burnt aleblaster, and plaster of Paris both of them finely powdred, & searced, & of ỹ like fine powder of newe earthen pots, some vse the powder of bricke in stead thereof. To three parts of the powders of Aleblaster, and plaster first mixed in equall proportion, mingle one parte of the powder of earthen pots or bricke; but many do cast of in wax, only in moldes consisting in aleblaster alone, or plaster alone, or both together without any other composition. Compositi on of the pap.

There bee some that thinke one shall caste more sharpely if hee doe likewise grinde the aforesaide

powders vpon a Marble ſtone after they bee ſearſed, but if you ſearſe onely, the ſearſe muſt bee exceeding fine. 2. If *Gypſum, alumen plumoſum*, or ſpawde bee not good to mingle with the reſt of the powders. I haue ſeene oftentimes many good patternes of mettall, caſt off very ſharpely in ſpawde alone, but you muſt heat the flaskes wel, before you pour in the mettals, and you muſt ſprincle the ſpawd with ſome moiſture, wherin there is ſome *ſal Armoniack*, before you doo imprint your patternes, ſome commend ỹ light and downy ſubſtance, finely gathered from the vpper moſt part of the aſhes of old coales.

Making of the pappe.

3 Of the aforeſaid powders, you muſt take a reaſonable quantitie at once, putting the ſame into a ſtone porrenger, or woodden diſh, and put thereunto ſome cleane water, wherein ſome diſſolue an ounce of *Sal Armoniack* to euery pottle of water, and preſently ſtir it wel togither as before, to make a perfect ſolution and mixture of the matters aforeſaide, this pap muſt not bee made too ſtiffe, when you caſt off braunches of hearbes or flowers, for then it woulde preſſe the leaues together. Sometimes temper with warme water, and ſometimes with colde, to make the pap drie the father, for ſome kind of workes.

Preperation of the papp.

4 If you would attaine to a perfection of this pap, you may weigh your powders before you put them into your water, and meaſure the water, which you mingle with your powders, and trying ſeuerall proportions of water and powder together, you may obſerue which of them proueth beſt in the moulds, and euer after continue the ſame.

Waters for the pap.

5 Some doo mingle *Aqua vitæ*, ſome vrine, and ſome put a ſmall quantity of *Sal Armoniack* to a great

great proportion of water, and therwith temper their pap.

6 As you poure in your pap, knock vpon the Table with your fist, hard by the cofin, to make the pap settle the better to the bottome, and more close to the patterne. To settle the pap.

7 If you woulde saue your patternes, as being of plaster, wax, mettall, Ale blaster, &c. Then take some clay that is well tempered, and not ouerstiffe, and make the *basis* thereof in discretion, according to the thicknesse of your patterne, and hollow or dimple the same a little, according as the fashion of your pattern shall require: then presse your patterne gently into that hollownesse, and with your fingers and knife together, worke vp your *basis* with more loame, till by as neere a gesse as you may, the iust one halfe of your patterne be euen wrought vp round about, then set vp your loame sides as before in your braunches or flowers, and poure in of the pap likewise as before, till you haue couered all the vppermost part of the patterne, that lyeth bare, with some reasonable thicknesse: then let it rest a prettie while, till it bee growne to some stiffenesse, and after take away your sides, & you shal finde the one halfe of the patterne truely imprinted in the dry pap. Then lay that halfe vppon your table, with the hollow part vpwardes, wherein the impression remaineth, and clap on your loame sides againe, leauing your patterne still within the pap, and poure more pap vpon the patterne, till you haue also couered the other part of the pattern with some reasonable thicknesse as before: then let it dry, and take away the sides, and dip the whole mouldé a little in water, and you may with your handes verie easilie, deuide the one side from the other. Take out Moldes of 2 partes.

your patterne, and keepe it to cast againe withall, as often as you please. Note here, that you must print some little gutters or hollowes in the lome, whereon your patterne lyeth after you haue fitted it, with the iust halfe of your patterne, and this is because ỳ pap which is powred on the second halfe shal fil vp those gutters or hollowes, wherby you may, after you haue taken out your patterne, knowe howe to shut your moulds very close together, which otherwise you should neuer be able to doe.

How to neale many moldes at once.

8 You may neale many moldes together, by laying one by one in a chimnie, with a small distance asunder, but first making a good lay of dead charcole vnder them, and after couer them all ouer with charcoles, making sides about the coles of lose brickes, and remember to lay the ends of your moldes where the gitties or entrances into them are made, towards you, that as you shal see cause, you may now & then stoop and look into the moulds, to see when they are throughly nealed, that you may surcease the making of any more fiers.

9 It is also very requisite to haue deep pannes, very full of sand, or ashes that be warme, wherein to set your mouldes, when they are made ready to cast in, and then to fill vp the mouldes euen to the neckes or gitties of them, for by that meanes you shall keepe your gold or siluer, from passing through the molds.

Molding many branches together.

10 Mold many branches of Time, Isop, rosemarie, &c, at once. that if some of them should faile, yet one or other might proue wel, for the charge is not great, neither of your moldes, nor yet in the melting of your mettall.

What heat in the moldes.

11 When you meane to cast any golde or siluer, you must neale the molds red hot againe, & cast presently.

ſently. But if in pewter or lead, a leſſe heat will ſerue, and ſome vſe no heat at all, but caſt the ſaide mettals in the moulds being cold.

12 You muſt make a vent with a ſtrawe from the bottome of the mold vnto the top, wherby the mettal (finding aire) may run the better, or rather make a double vent from each ſide of the mold; this ſtrawe muſt be laid in the cofin, before you pour in the pap, and when the mold is nealed, the ſtraw conſumeth to aſhes, and the vent appeareth, yet I haue ſeene many patternes caſt without giuing any vent at al. Venters for the molds.

13 Before you caſt of, cleer your molds from ỳ aſhes which are left behind, vppon the conſuming or burning out of the branches, flowers, wax patterns, &c. in this maner, preſently after the mold is cold inough to hold in your hand, take it by the great ende, & pat the mouth or gittie which is at the other ende, in the palme of your hand, till you can perceiue no more aſhes to iſſue out of your molds, and after by applieng the noſe or pipe of a paire of bellowes againſt the gittie, and ſo blowing out the aſhes. Som poure in quick ſiluer at the gittie, mouing the ſame vp and downe a prettie while, and ſo cleanſe their moulds. Clenſing of the molds

14 You may caſt off in wax, in the powders aforeſayde, but then you muſt holde your moldes in hot water for a time, and ſo the work may the eaſlier bee taken out, and in the ſaid moldes you may caſt off in wax diuers times, one after another. Note alſo, that you muſt dip the ſaid molds a prettie while in hot water, before you caſt off in wax, and preſentlie after, you haue taken the molds out of the water, & before you caſt, you muſt drie them with a ſponge. Wetting of the molds

15 Some are ſo preciſe in this art, as that they will neuer mold any fine patterns but in faire weather, or in ſummer time, and perſwade themſelues ỳ thẽ their Times to mold in.

molds

moldes do receiue the impreſſion moſt liuely, and alſo do lye moſt kindly.

Gittee large.

16 Let your gittee where your powre in your mettall be wide and large, according to the greatneſſe of your patterne, for that the weight of your mettall being thrustin, will by the peize thereof thruſt downe the reſt that runneth firſte into the farthest parte, or corners of the moldes.

Hollowing of ỹ gittee.

17 When your molds conſiſt of two partes, before you neale them, you muſte with a knife hollow, or take away ſome parte of the gittee, in the inſide of either parte of your molde, making the ſame like a gutter thereby to conney the mettall the better into the whole molde.

Casting in glewe and wax.

18 But if you will caſte any imboſſed patterns, of waxe, or any other ſlender or cutious paternes, that be vnder cutte as they terme it .s. ſuch as ſtande anticke wiſe, and whereof you may ſee ſome partes behinde, which will not ſuffer them to come oute of the moldes without breaking either the patternes or the moldes, then muſt you vſe this deuiſe following. Take one pound of common glew, put thereto one ounce of yellow waxe (ſome put two or three ounces) but firſt diſſolue the glew by a gentle fire, with a little water into a thicke body, and after this ſolution, put in your waxe, into which waxe, ſome doe vſe to put a little quantity of the fine powder of chareole ſearced, and ſome mingle the blacking only that commeth of the ſmoke of waxe or roſen there with. Then laye an euen peece of lome according to the faſhion of your patterne, but an inch broder then the patterne and in the midſt thereof place your patterne finely yled, then ſette vppe the lome ſides of your coffin and powre your glew thereon, being of a temperat heate

and when it is throughly cold, take away the sides of loame, and take out your patern gently. Note also ỳ whē you haue molded any gentle pattern in glue, you may open the moldes by slitting of them, or bowing them backwards therby the esilyer to get out the patterne without danger of breaking it, and yet the mold will returne to his first shape.

19 Note that you may dissolue your moldes of glew againe, and cast often in them according to the manner before set downe. Glewe serueth often.

20 *Qre.* Of hanging patterns by a threed in the glew aforesaid being first oiled ouer, vntil the glew be colde, and somewhat stiffe, and then carefully cutting out the patternes without impairing the molds. Here a good wit may find greate varietie of matter whereon to meditate, but I holde it not conuenient for the greate hindrance, to all the Iewellers, and workemen in golde and siluer, to discouer all the secrets either of this compositiō, or of the rest that are contained in this discourse, and that for sufficient reasons beste knowne vnto my selfe, and such others as haue spent their time, and thereby attained to any exquisite skill in this art of casting. Although I muste needes confesse that I haue giuen sufficient lighte, euen to the purblinde workeman to performe any excellent conceipts by this discorse. And as I looke for thankes of many that are ignorant herein, so I am sure to receaue blame of those who with long trauaile and expence, haue skarcely attained so muche skill as they may finde in this worke with a fewe houres study. Neither may I safely sette downe the infinite vse of this arte, for feare of the infinite abuse which would follow by the lewde, and sinister practizes of idle, and ill Whole patternes cast without defacing the patterne or molde.

disposed persons, that are ready with the Spider, to turne euery thing which they touch into poison.

The trewe heate of your molds and Wax.

21 Note that your moldes of glewe muste bee throughly colde before you caste your compounded waxe therein, and the waxe must be taken in a temperate heat, least it happen to dissolue the molde.

To lessen your patternes.

22 Note also the moldes of glew, the longer they stand before you cast in them, the lesser they waxe by reason of the water that vanisheth away; and therefore it is an excellent deuise, not only to caste strange and hard patterns in, but also to cast of your patterne into a lesse compas. So that if the grauing of the work manship of your pattern be grose and wide assunder, by this meanes it will become lesse, and shewe much smaller and finer to the eye. And if at the first casting in glew when your molds haue stoode three or foure daies to dry, your patterne come not little enough to your mind, then caste that little patterne againe in glew, and let that molde lye as longe a drying before you pour in your wax, and so with often casting in this fashion you shall bring your newe paterne to bee of a greate deale lesse compasse, and finer workemanship then the first patern. Note also that it is very requisite to make your moldes of glewe very thicke, for feare of warping, or casting awry. It is also thought very requisite to annoint the moldes within very delicately, with a fine calaber penfill, and with some of the thinnest of the aforesayd oiles, before you put in your waxe.

Casting in brimstone.

23 You may also caste, all your mettaline patterns in brimstone, and from thence in waxe, and after in aleblaster, and so into mettall.

24 Some will molde greate, and curious patternes in

in the crumme of fine manchet wel tempered into a paſt, and preſſed hard vppon the patterne, and ſome commend flower, and the fat of bacon diſſolued, and ſtrayned. Molding in cromes of breade.

25 Note alſo that you muſt firſt caſt all your curious patternes in yellow wax tempered with the fine powder of ſmale cole, and wrong through a cloth, and ſome thinke it beſt to put in the ſmale cole powder when the wax beginneth to coole, and then to ſtir it well that they may incorporate together. But if you wil caſt of in red wax, then muſt you put in ſome red ocre inſteade of ſmale cole, to color your wax withall. Some comend this compoſition of wax beſt ſc. 2. parts of old yellow wax one part roſen, & a litle blacking diſſolued, and mingled together, and then ſtreyned through a fine cloth: and when you haue once gotten your patternes in wax, then mold thoſe waxen patternes in the afforeſaid plaſters, alleblaſter, and bricke powder, and then burne out the wax as before in flowers, and cleer the moldes, and ſo caſt them into what mettall you pleaſe. Alſo when you haue molded any patterne in glew, you may caſt it of in Alleblaſter if you pleaſe. Artificiall wax to caſt in.

26 Some do greatly commende the fine powder of Flaunders melting pots that be new, and bole Armoniack mingled together in equall partes, you muſt put this powder in water, and mak agitation of them together, and then powre away the ſame water ſodainely into ſome cleane veſſell, and put in more water, reiterate your agitation as before, and ſo continew this worke vntill your water which you powre away from the powders becom cleer, then let al this thick water ſo gathered together, ſettle wel, and then dreine away the water by declination, and after drie Pōwders to caſt in.

this powder, and keep it to make pap thereof at your pleasure. And this was commended to me by excellent men for an excellent receit.

To cast in moldes of wax.

27 In this manner following you may cast of it wax, and also in waxen moldes, which is a delicate, and necessarie secret for them that can tell how to vse the same to the best purpose. You must take three quarters of a pound of rosen (yet some vse no rosen at all) and a pound of yellow wax, and an handfull of sifted ashes, melt them altogether, & put in the ashes when the rest is molten (in steede of ashes some vse spawd, or plaster burnt as before) and presently after the putting in of the ashes you must hold an iron that is red hot, or a great glowing coale in the dissolued substances, chaunging your iron, or coale as often as you se cause, for by this meanes you shall keep your materials from boyling ouer. In this substance you maie mold anie patterne that you please, then take out the patterne, and you may cast therein infinitly with a mixture consisting of two partes wax, & one parte rosen, but let the same bee but of a temperate heat when you pour it in, least you melt your moldes, and after it hath taken the impression, you may forthwith lay your moldes in water to coole your infused substances the more speedily, wet those moulds onely with a fine cloth, or penfill vsing no oile but in the gittee onely.

Strong moldes for grosse patternes.

28 If you would haue a strong compositiō, or earth wherein to cast great and grosse patternes of copper latten &c. Then take one part clay, tempering the same throughlie well vpon a marble, with flockes, adding thereunto two parts of bricke, and halfe a part of plaister wel burned (as before) work as ỹ said sub-

ſubſtances well and painfully together, and caſt your mettall therein after you haue molded off your patterns, you muſt ſet your moldes in a veſſell full of ſand and preſſe the ſame as harde as you can aboute the molde, euen from the bottome to the toppe thereof. And ſom vſe to caſt copper, and latten works in high gate ſande, ſome in lome only, ſome in cuttle bone, and diuers other ſubſtances, which becauſe they are more common then the reſte, I paſſe them ouer in ſilence.

29 The potters white claie is alſo very good ſubſtance to emboſſe in, if you drie the ſame throughly, and after beate into fine powder, and then ſearce it, and temper it with warme water. In the working, and alwaies when you leaue worke, keep your claie moiſt in a wet cloath, till you haue cauſe to vſe it againe. Matters to emboſſe in.

30 Some holde opinion that it is beſte to ſpende your aforeſaid powders whilſt they are freſh, and before they haue lien longe, for that the plaſter of Paris being of an attractiue nature, and deſirous to gain the moiſture which it hath loſte in the burning, will looſe his binding force if it bee not quickly ſpente, but after your molds be once nealed, you may keepe them a long tim ſo as you ſtop the gittes of them, that no duſt may enter into the moldes. The laſting of the powders.

31 Oile al your patterns of mettals, plaſter, or wax with a fine penſil, and with the oile of ſweet almonds but others eſteeme the oile of *T*urpentine or Spike, to be the beſt, by reaſon of their thinneſſe, whereby they will not fill vppe any parte of the worke. Then you muſt pat the paterns gētly ouer with a little clean bumbaſt, that you may leaue the oile very thin vpon ỹ patterne, ſom vſe *aqua vitæ* only. And ſom oile their Oiling of the paternes.

wodden patternes with oyle of waxe, butter, or larde melted, to keepe them from blistering in the molds.

The heats and toughning of Sol and Luna.

32 Learne of the Goldsmithes howe to take your golde and siluer in their true heates, as also with what additions to make the mettall runne the better and sharper, and how to toughen them both, that your worke proue not brittle. If you finde this work either too trobleſom, or too curious, then make your molds ready, and carrie them to some Goldesmithes, which haue their apt furnaces for the purpoſe, and let them heat, and toughen your mettals, and then cast them in your moldes so made ready as before.

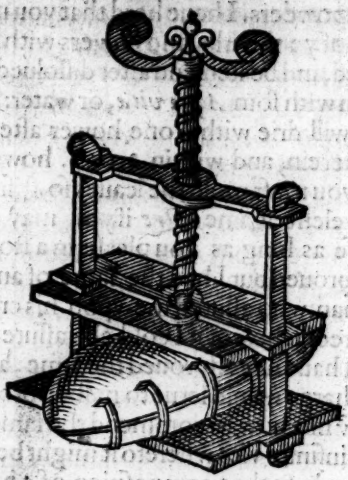
Collor ing, & boylin g of Sol, and Luna.

33 How to coloriſh your patternes in golde, and how to boile thoſe that are cast in siluer, I muſt refer you to the Goldsmithes, although I could easilie set downe both the matter, and the manner thereof, but becauſe therein I ſhould diſcouer a ſecret, that concerneth their whole trade, I haue thought good to ſuppreſſe it for this time.

Which patterne commeth sharpeſt.

34 The first time that you cast off your patterne, it will come moſt sharpely, if the worke be performed as it ought, and euer after more bluntly, but yet the ſelfeſame patterne will ſerue oftentimes, and deliuer his impreſſion truely, though not ſo perfectly in the eie of a worke man as at first.

35 Note, that you muſt haue a little preſſe of copper or Iron to hold fast your mouldes after they are made ready to cast in: eſpeciallie when your mouldes conſiſt of two partes, and the outſides of theſe partie moldes you muſt cramp together, when the molds



A copper presse.

are cold, with many little Iron Wiers made for that purpose; and then with a knife close the ioynts all ouer with some of the said pap, which closing or luting, you must also reiterate if you see cause, after the moulds be nealed, placed in your presse, and readie to receiue the mettals, at which time it shall not bee amisse in like manner to close vp and stoppe all the crackes, or chinkes of your moulds which you shall finde in them, after they be made ready to cast in, for otherwise, your mettall will oftentimes run through your moldes, and then is all your labour lost.

Cramping wires.

36 But in the casting of branches, of hearbs or flowers, some commend the sprinkling of the branch, or flower, first ouer with goode *Aqua vitæ* well rectified, and some doo wet the branch, first with a little pap that is made very thinne with *Aqua vitæ*, and she afore-

Preparing the herb or flower.

aforesaid powders. I haue herd that you may stiffen the leaues of your herbs, and flowers with fish glew, finely sliced, and beaten, and after dissolued in a clean leaden pan with som *Aqua vitæ*, or water: the leaues so stifned will drie within one hower after they are dipped therein, and within 2. or 3. howers after at the most you must mold the leaues so stifned, or els they will relent againe. *Qre* if you may not keepe them stiffe as long as you please in a stoue. This I haue not proued but I had the same of an excellent woorkeman, who assured me vpon his credit of the truth thereof, whereof if I cold also assure others (as hitherto I haue not disproued the same, and a small time, or charge would serue to make a proofe thereof) I know not how to commend the same sufficiently for the infinite vses whereto it might be aplied.

A composition of tin.

37 Some do make a composition of 4 parts of new Tyn, to one part of Latten, and cast diuers patternes therein.

Casting hollow.

38 If you would cast an egge, or any other patterne hollow thereby both to haue your worke the lighter, as also to spare gold and siluer, which groweth to be costly in sad workes; then must you line both the insides of the party mold with thin past, made of tough flower, and water onely, and wroughte into an equall thicknes by the meanes of a rowling pin whose portrature you shall finde *Posthea* nu. 39. Note also that vpon one of the parts of your mold, there must be made a crosse of wire fastned into the mold by turning of the endes of your wire into the same, then lay both the sides of the mold togither, each of them hauing their thin past fitted within, iust with the circle thereof: then at the gittee of your mold powre in some

ſome plaſter made into pap, if you caſt but in lead or elſe ſom of ỹ firſt compoſition .s. plaſter, Aleblaſter, and bricke together, if you caſt of in gold and ſiluer; but firſt you muſte anoynt all your paſt very neately with a fine penſill, and with the fat of bacon, melted with a gentle fire, and before it congeleth; for this maketh your worke to come very ſmoth on the outſide. Then take your mold in ſunder, and take out the paſt out of either parte, and hang in the core againe in the firſt holes, ſet your mold together againe, cramping, and luting it on the ſides, and then neale it, and poure in the mettall, which running round about the core muſt of neceſſity be hollow, and of an equal thicknes, then at ſome hole in the end, or ſide of your work you may picke out all the plaſter, or other compoſition, and ſo you may caſt any patterne both light and hollow: you muſt alſo remember to make your gitty, and to vſe the other meanes ſette downe *Antea num. 7.* to make the one ſide of your mold meet with the other.

You may caſt hollow, & light either in leade, pewter, or wax, if after you haue caſt your work ſolid, you powre out againe at the bottome thereof ſo much as will run, but the exact time when to powre out, muſt be gotten by often practiſe, and cannot well bee expreſſed in words.

39 You muſte haue a rowling pin of a foot long, made of 6, or 8 inches compaſſe, and the ſame taken

The rowling pin.

downe the thicknesse of a ſhilling all the length thereof, ſauing halfe an inch at either ende, whereby you cannot faile to make your paſt, al of one iuſt thicknes.

To mold the hand or face of a man.

40 In the foreſaide glewe you may molde ones hand, or face if the partie be firſte laide on his backe, with his eies plaſtered ouer, his noſe and eares ſtopt with wooll, and his mouth cloſed vp, ſauing that in the midſt he may draw breath by a little hole at a pipe or quil, and then ſet your ſides of lome, as before, about his face, which ſome annoint ouer with oile (as before) and poure on the aforeſaide glue beeing but temperately warme. This is an excellent deuiſe to haue the liuely counterfeit of the true fauour & countenance of euery man.

The placing of your braunches.

41 Some doo hold it beſt to ſet your flowers and branches vpright, & not ouerthwart wiſe, with their tops vpwards, before you moulde them, for ſo they are perſwaded, that the leaues will ſpread abroad the better, and diuide themſelues in ſunder, whereby the mettal may run into euery leafe feuerally.

Killing of the beaſts.

42 Some doo kill Toades and frogs, which they meane to caſt, by leauing them in oyle till they die, and ſome do put ſtrong water into their mouthes. As for flies, ſpiders, graſhoppers, and ſuch like, you may keepe in cloſe boxes, and let them die for lack of aire, and then mold them whileſt they are ſtiffe.

To print graued paternes vpon paper.

43 If you would take but the print of any worke, grauen either in braſſe, wood, or other bodie. Firſt, with a ſpoonge lightly wet ouer your paper with fair water (ſome commend Allome water) then make a ſable colour with the fume of ſearing wax candle, in a ſpoon, porringer, &c, to the which put a few drops of ſallet oyle, or of the extracted oile of cloues, temper

per the same wel together, and put it lightly vppon the ingraued patterne, with a quilted leather, such as Printers vse, then clap the print vppon your paper lightly wet as before, and take off the paper, and you shall finde the impression very faire, if you do it carefully. Note, that if your pattern be of wood, you must lay the same first a pretty while to soke in Water, before you lay on your sable vpon it, because the wood wil drie vp the colour exceedingly. Note also, that the smoke of tallow, maketh a good sable, the smoke of rosen a better, but the smoke of wax giueth y best of al other, and thereof is made that excellent veluet blacke, vsed in the art of Lymming.

44 It is a pleasing and commendable practise, by this Art to mold of those excellent counterfeites, of carued or embossed faces, dogges, Lions, Borders, Armes, &c. from toombes, or out of noble mens galleries: as also of pillers, balles, leaues, frotages, &c. therewith to garnish beds, tables, court-cupboords, the Lawmes and mantletrees of chimnies, and other stately furnitures of chambers or galleries. But I may not disclose the whole Art with euery circumstance, whereby to make the same contemptible with the vulgar sort: onelie I wil giue a taste thereof vnto the sharper wittes, who with some studie, and practise, may reach vnto the full perfection thereof. And therefore, whosoeuer can first dissolue Isenglasse or fish glew, as it ought to be, and after harden the same by such means, as that no sudden moisture can make it to relent or giue againe, the workeman and Artist whatsoeuer he be (and I am sure there be some such, though but verie few, that I know in England) may cast many rare and excellent patternes, in the fine fi-

Speciall vses of this Arte.

led or raped duſt of Braſill, box, Ieat, Amber, alebla-ſter, Ebonie, Elephants tooth, and ſuch like: beeing firſt well tempered with the glew ſo diſſolued, or with the pap of common paper, beeing wel wrought and laboured with the hande of a workeman. And hee may alſo make his moldes of the fineſt and whiteſt potters Clay, when they haue wrought and tempe-red it firſt in their manner. Of els if ſome excellent Caruer in wood or ſtone did carue ſome excellent peece of a border, of halfe a yard long, and a foot in breadth, with antique faces and perſonages, or other frutages thereon, and with the coatarmors of gentle-men, and other pleaſing deuiſes, to garniſh the ſame; the aforeſaid Artiſt, might thereby eaſilie and with ſmall coſt, caſt off whole borders for chambers or galleries, in the aforſaid ſubſtances or compoſitions, which would ſeeme to be of infinite charge. And for the better encouragement heerein, of thoſe that ſhal be doubtfull, and ſuſpitious of this skill, let this ſatiſ-fie them, that *I* haue ſeene not farre from London bridge, diuers excellent and carued patternes caſt off in ſand, and common glew, but they would endure no weather, yet they will ſerue ſuf-ficiently within doores ſo as they bee kept drie.

Here endeth the art of Caſting.

An offer of certaine new inuentions, *which the Author will bee readie* to diſcloſe vpon reaſonable conſiderations, *to ſuch as ſhall be willing to entertaine* them, or to procure ſome Priuiledge for them.

1 *A new kinde of fire.*

THis fire is of much leſſe charge then the ordinarie ſeacole fire.

2 It is much ſweeter in the burning, and more beautifull in ſhape, beeing made in the form of balles.

3 It is very dureable and laſting.

4 It is not ſo offenſiue either in ſmoke or cinder, as the ſeacole fire.

5 It wil employ many thouſands of maimed ſouldiers, and other poore and impotent perſons, in the making thereof.

6 It will rather bee a great furtherance than any hinderance vnto Newcastel men.

7 The matter wherewith the Seacole is both multiplied and sweetened is verie plentifull, and cannot faile or grow deare, by the great expence thereof, if such care be had therein as the Author wil discouer.

8 It will be an especiall meanes to preserue Timber for the building of ships, and other necessarie vses.

9 It wil bring charcole and billets to a more reasonable price.

10 And if this secret might, (by anie carefull and prouident meanes) be brought into publike vse, with the good contentment of the Authour: Then the tenth part of the profit that shuld arise therby, might be yearelie distributed amongest sicke persons, and maimed souldiors, or otherwise conferred vpon such other good vses, as should bee thought most conuenient.

2. *A vessell of Wood, to brew or boile in.*

1 THat the same is truelie and royalie performed, I appeale to the proofes in my Apologie, published An. 1593. And if there be yet anie manner of person, that shall notwithstanding my testimonies therein produced, either peruersly hold the same to bee impossible, or maliciouslie and slanderouslie reproue the inuention of vntruth, then let him wage such a competent sum of monie, as may counteruail the discouerie of the secret, and the Author wil make a publike shew therof before anie indifferent Iudges. Where, if they shal vpon sufficient trial had, censure against the Author: then he wil forthwith redouble the

the wager vnto ſuch offerer, and for euer hereafter forſweare the publiſhing of any ſuch woodden conceit againe to the world.

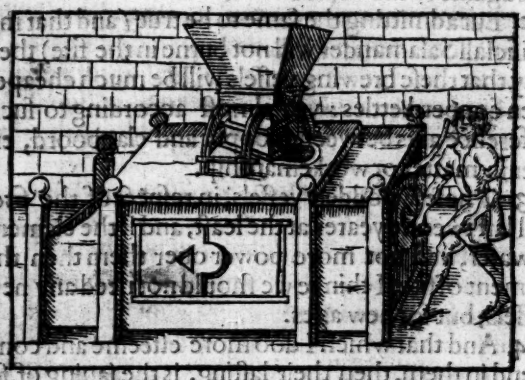
2 But admitting the ſame to be true (and that my artificiall Salamander will not burne in the fire) then I ſay that theſe brewing veſſels will be much cheaper then copper kettles: yea almoſt according to ſuch difference as is betweene copper and clapboord, either in matter or workemanſhip.

3 Theſe woodden veſſels, in reſpect of the fire, will laſt twentie yeares at the leaſt, and if the element of water, had not more power ouer them then the element of fire, I thinke we ſhould not need any new veſſels, but for new ages.

4 And that which I doo more eſteeme and commend in them, then their laſting, is the ſauing of fewel, which cannot be leſſe then a moity of that which is now vſuallie ſpent in the houſes of all the gentlemen and farmers of this land.

5 Theſe veſſels being once prepared by the Author, may afterwardes from time to time, with little labor and leſſe coſt, be repaired by the owners themſelues, with ſuch Art as ſhall be manifeſted vnto them vpon their firſt handſell.

A howling Hutch.



1 THe price heereof is easie in respect of those good vses for which it serueth.

2 This Engine auoideth al wast of meale and flower, and yet it deuideth the bran sufficiently from the flower.

3 It will bee a meanes to saue boulters, which is a matter of great charge vnto the Baker.

4 But the especiall vse thereof, is to auoid all that grose and vncleanlie manner of boulting which the Bakers for want of this engine are forced to vse, the particulers whereof appeere more at large in my Apologie.

5 All obiections that were made against this inuention, by the Bakers of the Citty of London, vpon the view thereof at my house, were sufficiently refelled by the Author, in the presence of diuers Cittizens of good worshippe and account, and therefore what

what inconueniences soeuer shall hereafter either by them or by any other be pretented against the same, I would haue them holden for false and malicious.

6 This boulting huch is very dureable, neither wil it be chargeable in reparations to the owner.

4 A portable pumpe.

1 IT will be in price one of the cheapest pumps of all that I know or euer heard of, and wil require but small reparations.

2 It is light in cariage and may be transported from place to place, by one single man without any further helpe.

3 With the easie labour of one man, it will deliuer foure, fiue, or six tun of water euery hower, according as it is in bigneſſe, neither can a man possibly be weatie, though he should worke fiue or six houres together, without intermission.

4 Being placed in a fit tub, that is bored ful of holes

or fastened in the water to a peece of Timber, it is a very apt instrument for the dreining of the fen countries, or any other surrounded leauell, or standing water, poole or pond, becausse it is so portable, and needeth no fastening at all on the grounde, as other pumpes doo.

5 It is also a verie conuenient pumpe, for all such as dwel neere the riuer of Thames, to force vp water for the seruice of their kitchens, which may be performed in a most reasonable manner.

6 It is not amisse, to haue two or three of them in store, for the necessarie seruice of euery shippe in her fight, if any occasion be offred to vse them vpon any great or sudden leak, they are but little, and require small stoage.

5 *A wholesome, lasting, and fresh victuall for the Nauie.*

1 WHen corne is sold for twenty shillings ỹ quarter, then eight ounces thereof may be affoorded for a pennie, which is a competent meale for any reasonable stomach, and serueth both for breade and meat.

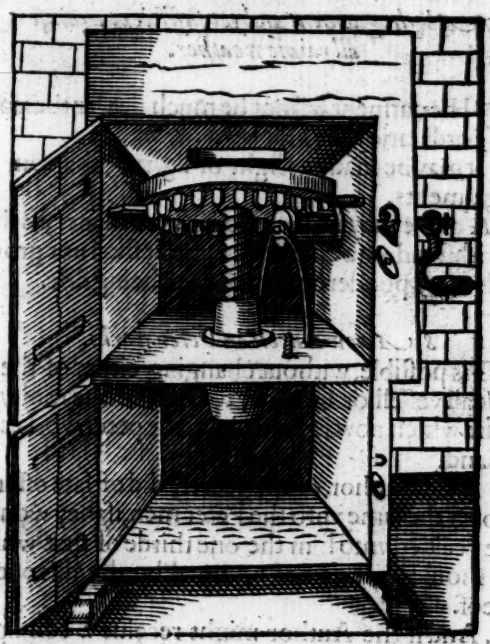
2 *It* is in shape like wafers, light of carriage, and will last two or three yeares sound and sweet, if it bee kept dry.

3 It may be vsed now & then, for change of diet.

4 Being carefully handled in the dressing (according to the Authors direction) it wil bee pleasing enough to the Marriner, and I haue had the same sundrie times serued in at mine owne table to the good contentment of my friends.

An

An Engin for the making of this victual.



6 A speedie way for the inning of any breach.

1 I Thinke it possible by this deuise (hauing first prepared so many artificial stones as shal bee requisite in this worke) in one monthes space, to shut vp the great breach at Earith, and that in so strong and defensible a manner, as shal be sufficient to withstand al the rage and furie of those surges that shall beate or break vpon it.

2 The charge of euery yard square will bee much about fiue shillings.

3 It

3 It is a very dureable and lasting maner of work, and may be wrought in any time of the yeare.

7 A light garment and yet sufficient against all rainie weather.

1 THis garment wil not be much dearer than our ordinarie riding clokes.

2 It may be made as light or lighter, than our vsual garments.

3 A cloke may be prepared in such maner, as that notwithstanding a continual raine, it shall not growe much more ponderous, then it was being drie.

8 A new conceit in Peter works.

1 IT is possible, without changing either of the vsuall vessell or furnace, to saue the one moity of the fire which now is spent in al the peter workes of England.

2 The Author of this secret, did of late offer to discouer the same vnto the Peter men, if they woulde haue yeelded vnto him the one thirde of that which they should haue gained or saued by the discouerie thereof.

3 And if the Author might receiue a condigne reward for his profitable trauell, he would peraduenture find out a multiplyeng earth, which would yeeld sufficient store of Peter, for the seruice of this Realme without committing such offenses as are dayly offered, in the breaking vp of stables, barnes, sellers, &c.

Nec omnes nec omnia mihi placere, nec ego omnibus.

Hugh Plat.

FINIS.